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Global Research

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Powered by UBS Evidence Lab

China Education Sector

UBS Evidence Lab: Taught in China 2025 – how will online education reshape the sector landscape?

Equities

China
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Online afterschool tutoring to be worth Rmb0.7trn by 2025E

K12 education (from kindergarten to year 12) is among the industry verticals with the lowest online penetration in China. Recent fundraising by online education companies and aggressive online investment by offline afterschool tutoring (AST) leaders such as TAL and New Oriental have ignited debate on whether the online transformation of education lies around the corner. We break down the prospects for online AST into four scenarios, pivoting on two key factors: technological advancement and parental acceptance. In our base case, we estimate an online AST market size of Rmb714bn by 2025, up from Rmb29bn in 2017E, with greater consolidation than the offline AST segment (see interactive model powered by UBS Evidence Lab), bringing substantial revenue and profit upside for successful first-movers, including TAL and New Oriental.

What could push online education to the tipping point?

Our recent UBS Evidence Lab survey showed that parents currently prefer offline classes since online classes lag behind in teaching quality. However, we expect this to change in coming years, as significant evolution in technology (eg, AI, VR, facial recognition) could potentially enhance the quality of online teaching and improve the user experience. Combined with a new generation of internet-savvy parents (ie, millennials, Generation Z), adoption of online education could expand, driving the share of AST time spent online to about 50% by 2025E, up from about 13% in 2017E. Online delivery should also allow expansion of AST in lower-tier cities and rural areas, lifting overall AST penetration; thus, we do not view the online transition as a zero-sum game.

Same education but different competitive landscape

We expect online AST to follow in the footsteps of other online verticals and consolidate with a handful of major players. The large amount of capital needed for R&D and marketing raises barriers to entry and, since online breaks down offline physical constraints (ie, teachers and location), smaller players could be pushed out. TAL/New Oriental's competitive advantages are more pronounced in online AST, where they leverage their offline know-how, brand, customer base and financial resources.

TAL and New Oriental: the key beneficiaries – looking undervalued

In our opinion, mainstream valuation approaches (DCF or PE/PEG) for TAL/EDU do not properly capture the value of their online businesses. The market has rewarded other early movers online (eg, VIPKID, Ping An Good Doctor) with generous valuations. We consider TAL and New Oriental to be similarly positioned but relatively undervalued.

Figure 1: China education – valuation comparison

Company name	Ticker	Rating	Price (US$)	Mkt cap (US$m)	30-d ADV (US$m)	PE FY1E	PE FY2E	PE FY3E	P/BV FY1E	ROE FY1E	EPS growth FY1E	EPS growth FY2E	EPS growth FY3E	EPS CAGR (FY0-FY3)	PEG
TAL	TAL.N	Buy	37.02	19,756	74.9	60.8x	38.9x	26.1x	12.9x	21.3%	47.1%	56.1%	48.9%	50.7%	0.8x
New Oriental	EDU.N	Buy	91.71	14,501	36.4	32.1x	23.5x	17.6x	7.9x	19.0%	36.8%	36.6%	33.3%	35.6%	0.7x
OneSmart	ONE.N	Buy	11.96	1,949	1.3	27.4x	23.8x	17.5x	7.9x	41.1%	39.9%	36.8%	36.1%	37.6%	0.6x
RISE	REDU.O	Buy	14.09	851	4.4	29.7x	21.8x	16.1x	11.0x	45.3%	28.9%	36.6%	35.3%	33.6%	0.6x

Note: Priced as of the market close 5 July 2018. OneSmart's EPS growth rate refers to non-GAAP adjusted net profit growth.
Source: Thomson Reuters, UBS-S estimates

UBS-S Research THESIS MAP a guide to our thinking and what's where in this report

OUR THESIS IN PICTURES→

	MOST FAVOURED	LEAST FAVOURED
	TAL and New Oriental	**N/A**

PIVOTAL QUESTIONS

Q: How will online education transform afterschool tutoring by 2025?

By 2025, we expect online classes to deliver teaching quality on par with offline classes, thanks to technology advances (eg, AI, big data, VR, facial recognition), and to be embraced by a generation of more internet-savvy parents. In our 2025E base case, we estimate about 50% of students' afterschool tutoring (AST) time will be spent in online classes, translating into revenue of Rmb714bn. This represents significant upside from 2017E's Rmb29bn in online K12 AST revenue. In our blue sky scenario where online outperforms offline in teaching quality, online revenue could potentially reach Rmb1,227bn.

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Q: Will K12 online tutoring consolidate into an oligopoly?

Yes. We expect online AST to follow in the footsteps of other online verticals in China and consolidate into a segment with only a handful of major players. Unlike offline AST, which has lower barriers to entry, online AST requires strong R&D and operating capabilities, a solid brand and the financial resources for marketing, putting it out of reach of smaller, less well-funded players, in our opinion. TAL and New Oriental have the brand strength, know-how and established customer base to succeed in online AST, and are well positioned to capture the significant revenue potential.

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UBS-S VIEW

We anticipate shifts in consumption preferences and technology that could propel an online transformation in education in China. We expect the online K12 AST market to grow due to technology advancement and for online education to be embraced by a generation of more internet-savvy parents. We expect the online AST market to become more consolidated than the offline market due to higher entry barriers (capital strength, operating capability and brand recognition). We consider TAL and New Oriental to be well positioned to capture the significant upside potential, a factor we believe is not priced into the shares.

EVIDENCE

Our recent UBS Evidence Lab survey indicates Chinese parents still predominantly prefer offline AST. iResearch and Sina Education surveys suggest parents' biggest concerns about online courses are: 1) study outcomes; and 2) service quality. Leading players' investment in AI, VR and facial recognition technology could improve quality and parental acceptance of online education, especially since a more internet-savvy generation will become parents of K12 students by 2025. Online AST providers need to have the financial resources for R&D and marketing, which potentially puts the market out of reach for smaller players, thus creating a more consolidated landscape.

WHAT'S PRICED IN?

From our conversations with investors, we think the market has yet to reach a consensus on the long-term growth potential of online education. TAL and New Oriental are trading at slight discounts to listed K12 private schools, which have much less online exposure, and they are at a discount to other early movers in online transformation; thus, we believe strong positioning for expansion in online education is not priced into TAL and New Oriental shares.

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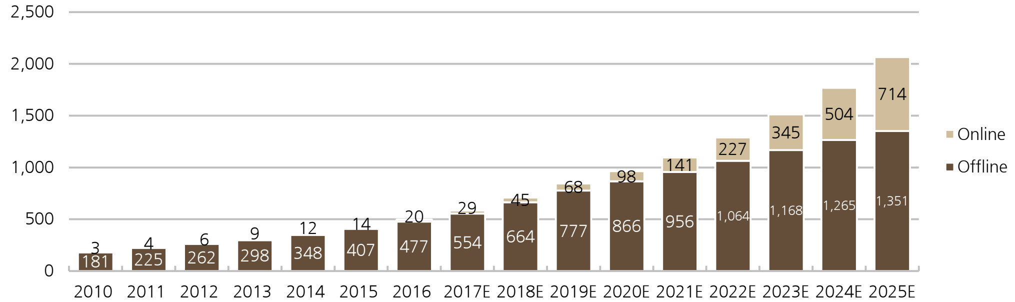
Online AST market – revenue potential, base case (Rmb bn)



Source: The Chinese Society of Education, China Youth & Children Research Center, China Institute for Educational Finance Research, UNPD, Haver, CEIC, Wind, Company data, UBS, UBS-S estimates

OUR THESIS IN PICTURES

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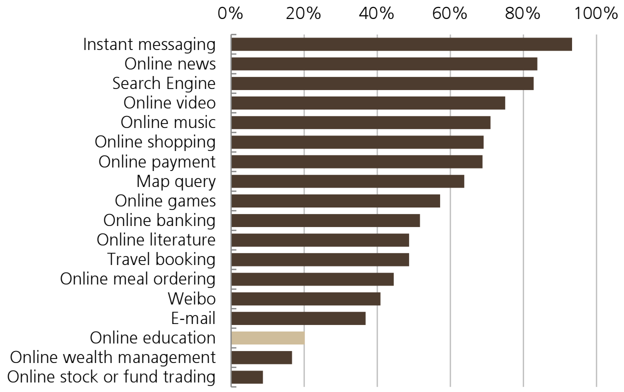
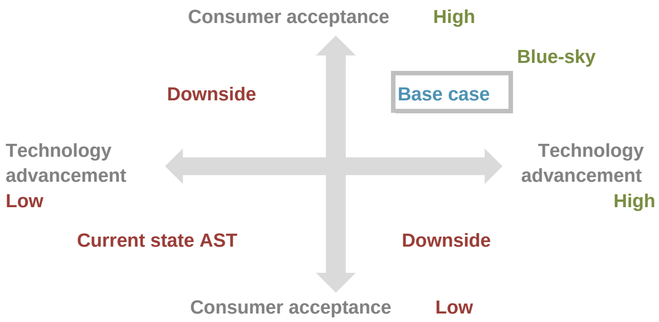
Penetration among Chinese internet users (2017)



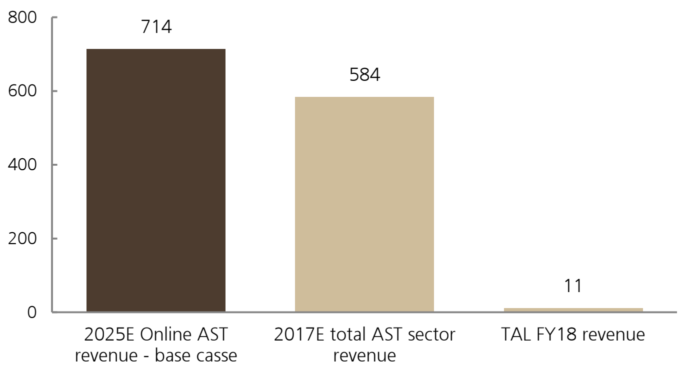
Education is among the verticals with the lowest online penetration—it is ripe for transformation, in our view

Online afterschool tutoring scenarios



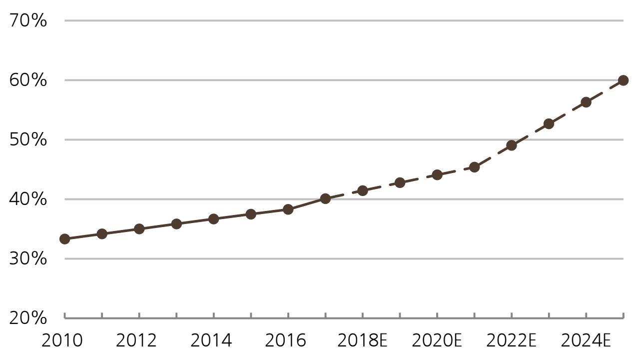
2025E base case: high level of consumer acceptance and technology advancement drive strong online adoption in afterschool tutoring

Revenue comparison (Rmb bn)



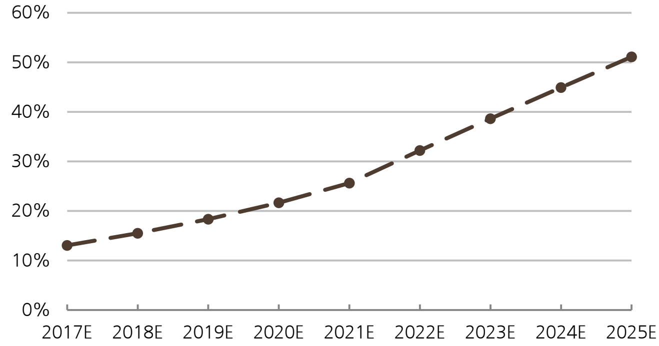
We think online could provide significant revenue upside for the afterschool tutoring sector

Penetration of afterschool tutoring – base case



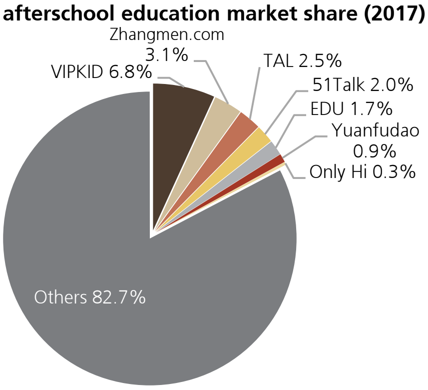
We expect penetration of afterschool tutoring to increase to 60% by 2025E as the online format makes high-quality tutoring available to more students

Share of afterschool tutoring time spent online – base case



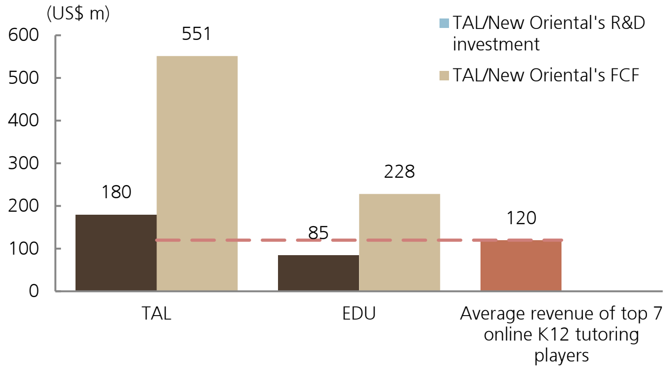
As better technology enables online classes to deliver teaching on par with offline, we expect about 50% of afterschool tutoring time to be spent online by 2025E

Online K12 afterschool education market share (2017)



We expect the online afterschool tutoring market to be more consolidated than offline…

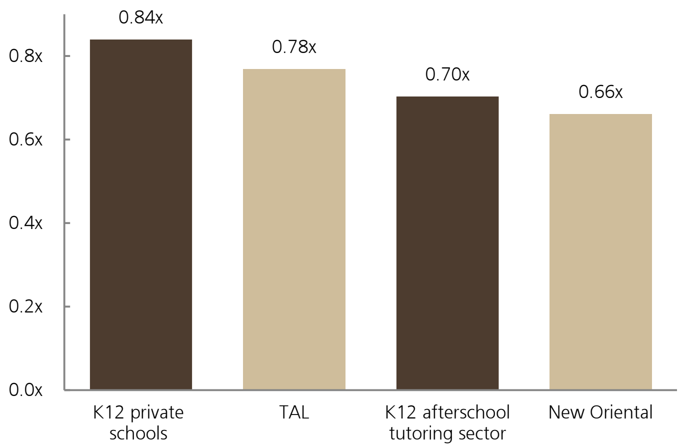
TAL and New Oriental R&D expenses vs average revenue



Note: R&D data for TAL and New Oriental based on FY19 guidance; revenue data for top-7 online players are approximate for CY17.

…given the financial strength required to fund initial R&D and marketing, and the higher requirement for brand recognition; TAL and New Oriental are well positioned

PEG comparison



TAL and EDU are trading at a slight discount to listed K12 private schools, which have much less online exposure; we believe their strong online positioning is not priced in

Sources for exhibits above: iResearch, Sina Education, ITJuzi, Thomson Reuters, Company data, UBS-S estimates

Signposts

The potential path to our 2025 base case scenario and the datapoints to track

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We think the online transformation of afterschool tutoring (AST) in China will start with the junior English language training (ELT) segment.

As the major online junior ELT players progress through their fundraising rounds (both the listed and the unlisted companies), we expect more enrolment data to emerge, which could help track the expansion online. For example, DaDa, an (unlisted) online junior ELT provider, has guided for enrolment of 300,000 in 2018. We will be tracking benchmarks such as this, as well as the enrolment/revenue momentum from online provider such as 51Talk (COE.N, Not Rated).

2019E

We expect parents' acceptance of online tutoring will gradually pick up. Our November-December 2017 UBS Evidence Lab survey indicated 14% of parents prefer online classes rather than physical classes for their children, when choosing AST programmes. We expect online interest to pick up in AST segments other than ELT.

Leading players such as TAL and New Oriental should achieve above-industry online enrolment/revenue growth momentum averaging an 80% YoY increase in FY19 and a 59% YoY increase in FY20E, on our estimates.

2020-21E

By 2020-21, we expect new technologies like artificial intelligence (AI) and virtual reality (VR) to be more widely applied in online AST.

We estimate overall AST penetration will improve to 45.4% by 2021 on a greater contribution from lower-tier cities and rural areas, and the share of study time spent online could reach 26%, double the 2017 level. UBS Evidence Lab will help us track this data.

2022-25E

AI and VR, as well as facial and emotional recognition technologies, will be more mature and widely applied in online classes at this stage. We believe technology for online education provision could be mature enough to deliver teaching quality on par with, or even superior to, offline courses. We expect technology gains to be reflected in a high level of parental satisfaction in online courses.

By 2025, we expect overall AST penetration to be at 60%, up from 40% in 2017, with penetration in lower-tier cities/rural areas improving from 45%/25% in 2017 to 65%/45% in 2025E. Online will account for half of total AST study time by 2025E.

Technology could further help businesses to evolve in a less labour-intensive direction. We expect online profitability to outperform offline businesses at this stage.

Sources : UBS estimates

PIVOTAL QUESTIONS

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Q: How will online education transform afterschool tutoring by 2025?

UBS-S VIEW

By 2025, we expect online classes will be able to deliver teaching quality on par with offline classes, thanks to technology advances (through the application of AI, big data, VR and facial recognition technology, among others). We expect online education to be embraced by a generation of more internet-savvy parents. In our 2025E base case, we estimate about 50% of students' afterschool tutoring (AST) time will be spent in online classes, up from about 13% in 2017E. Online K12 afterschool tutoring revenue should reach Rmb714bn by 2025E, presenting significant upside from 2017E's Rmb29bn in online revenue and Rmb584bn in overall AST revenue.

EVIDENCE

Online is a fledgling segment in the K12 AST market, contributing only about 5% of total sector revenue, based on data from Wind and our industry model, likely due to a relatively low level of parent/student acceptance and online courses' lower ASP. In our November-December 2017 UBS Evidence Lab survey of 1,200 parents across Tier 1-4 cities, 72% of parents preferred pure offline AST providers or offline providers with supplementary online content, while only 14% preferred pure online schools. Online ASP for TAL and New Oriental in FY17 was on average one-quarter of offline ASP.

We anticipate shifts in consumption preferences and technology that could propel an online transformation in education. In English language training (ELT), a segment in China where online education has a headstart, 53% of parents indicated willingness to potentially switch to online and 20% were using online courses, according to a late-2016 survey by iResearch.

TAL and New Oriental are actively committed to R&D and technologies related to online education are a key focal point. For FY19, TAL and New Oriental are guiding for about US$180m and US$85m in R&D spending, respectively, a level of commitment that we believe smaller competitors cannot match.

Education: the final battleground for online transformation

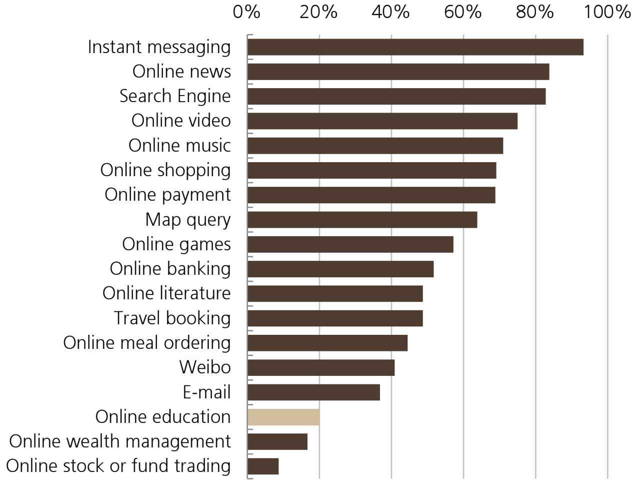
Education is among the day-to-day activities with the lowest online penetration in China (Figure 2), especially in K12 education (Figure 3 and Figure 4). We think the combination of two key factors explains the low online penetration level in K12 education currently:

(1) Technology is unable to deliver online teaching quality on par with offline courses, based on current parent perceptions.

(2) Parents have a relatively low acceptance of online courses (Figure 6), due to unproven teaching quality and a generally risk-averse approach when making decisions about their children's education.

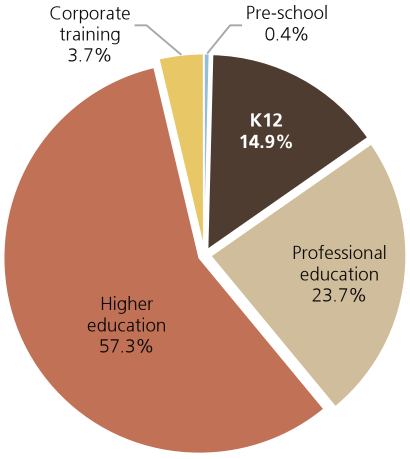
We expect neither of these underlying factors to be sustained over the long term and we consider online education, especially in the K12 afterschool tutoring segment, to be ripe for an online transformation.

Figure 2: Penetration among Chinese internet users (2017)



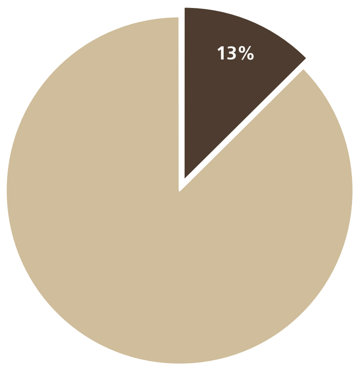
Source: China Internet Network Information Center (CNNIC), Wind, UBS-S estimates

Figure 3: Breakdown of China's online education industry revenues by segment (2017)



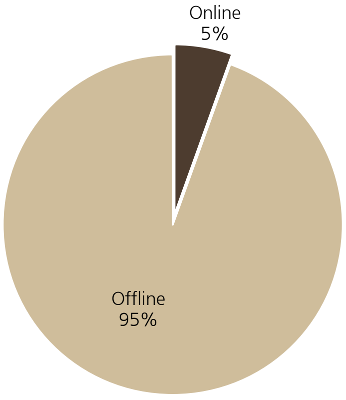
Source: Wind

Figure 4: Penetration of online education among China's K12 students (2017E)



Source: CNNIC, Wind, UBS-S estimates

Figure 5: China's K12 afterschool tutoring revenue share (2017E)



Source: Wind, UBS-S estimates

Will students spend a major portion of their afterschool study time online?

We think they will, as the quality of online education improves with advances in technology and parents become more open to the learning format.

Our recent UBS Evidence Lab survey showed that parents prefer offline classes (Figure 6). Based on survey data from iResearch (late 2016) and Sina Education (2017), we believe offline classes currently outperform online classes in terms of: 1) study outcomes (arguably the ultimate goal of AST); and 2) service quality (which also drives customer satisfaction, thus purchasing power). We consider these to be the two most important factors driving parents' AST decisions.

However, we believe these are also the two factors that in future are likely to tilt in online education's favour—better technology (such as AI, VR and facial recognition, among others) and greater parental acceptance of the online format.

Figure 6: Parents' preference for AST activities – online classes currently lack appeal among parents

	Base	Face-to-face	Online through personal computers	Online through smartphone or tablets	Combination of face-to-face and online (PC/Smartphone /Tablets)	No preference
Understanding the programs before attending	1200	48%	20%	10%	14%	8%
Attending courses	1200	52%	16%	9%	18%	5%
Doing homework	1200	34%	25%	16%	16%	9%
Submitting homework	1200	35%	24%	16%	16%	9%
Asking questions to teachers	1200	40%	17%	13%	24%	6%
Checking course schedule or other administrative	1200	20%	26%	28%	17%	10%
Downloading course materials	1200	12%	40%	26%	14%	7%
Interacting with classmates	1200	37%	18%	16%	22%	8%
Parents interacting with teachers	1200	30%	19%	21%	22%	8%
Paying tuition fee	1200	23%	21%	29%	12%	14%

Source: UBS Evidence Lab

Figure 7: Pros and cons of online and offline education – present

	Online	Offline
Study outcome	X	O
Service quality*	X	O
Classroom interactions, study atmosphere	X	O
Teacher qualification	O	X
Flexible location, less commute time	O	X
Lower tuition fee	O	X

*Answering questions after class, providing parents with study feedback, etc.
Source: Sina Education, iResearch, UBS-S

Figure 8: Pros and cons of online and offline education – 2025E

	Online	Offline
Study outcome	**O**	**X**
Service quality*	**O**	**X**
Classroom interactions, study atmosphere	X	O
Teacher qualification	O	X
Flexible location, less commute time	O	X
Lower tuition fee	O	X

*Answering questions after class, providing parents with study feedback, etc.
Source: UBS-S estimates

For technology to help achieve improved study outcomes, we think:

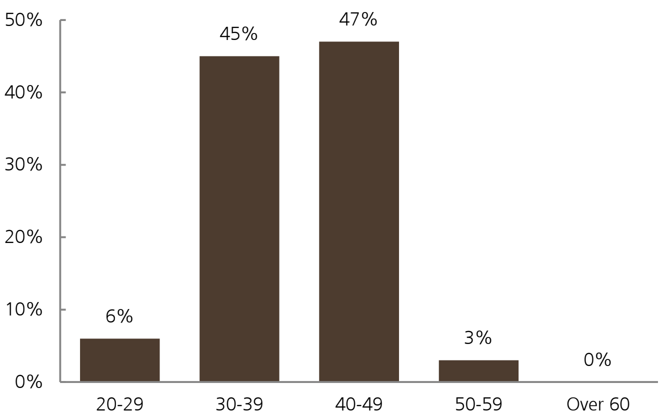
(1) Maturing AI technology could provide a scalable solution for individualised tutoring, within the context of large online AST class sizes, thus improving teaching quality.

(2) VR could blur the line between online and offline classes, enhancing the online learning experience and enabling more engaging/intuitive content.

(3) Application of facial/emotional recognition technology could encourage improved student attention and focus during online classes, addressing parents' concerns over students not applying themselves for online courses.

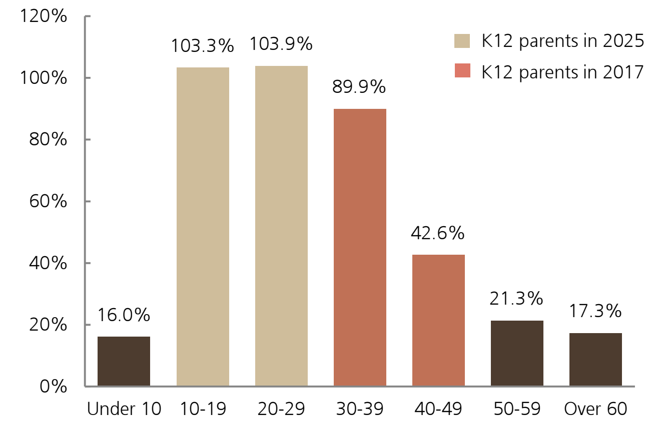
We expect parents' acceptance of online education will gradually pick up, partly because of improved study outcomes as a result of technology advancement and partly through improved online service provision—especially as parents of K12 students increasingly come from a more internet-savvy generation (millennials and Generation Z) (Figure 9 and Figure 10).

Figure 9: Age distribution of K12 parents who are internet users (2017)



Note: All respondents in our survey are internet users.
Source: UBS Evidence Lab

Figure 10: Internet penetration among age groups (2017)



Source: CNNIC, Wind, UBS-S estimates

Our base case scenario: high online adoption across segments

We expect about 50% of overall K12 afterschool tutoring time could be spent online by 2025. Our base case scenario of high online adoption across segments assumes:

(1) Technology advancement could enable online education to deliver teaching quality on par with offline education.

(2) Internet-savvy millennials (and Generation Z), as they become parents of K12 students, would be indifferent to a class being taught online or offline. Their focus will be on the quality of teaching and service provision.

We believe the likely beneficiaries will be the first-movers in online education, which have solid reputations and are known for their teaching quality, such as TAL, New Oriental among others. Those likely to miss out in the online transformation of education will be offline players who are slow to migrate.

In Figure 11, we present four different scenarios for the potential development of online education by 2025, with the two key pivots being technological development and parent/student acceptance (please also refer to our interactive model).

Figure 11: Online education scenarios and potential beneficiaries – 2025E

Parents'/students' acceptance **High**

Online dominance in selected segments

Consumers embrace online education, but technology fails to make it feasible in every education scenario. We expect online to prevail in selected segments with proven technology (online ELT, online 1-on-1 tutoring). Otherwise, online is more a welcome supplement. **Beneficiaries**: offline players with good supplementary online offering, online players in selected segments. **Laggards**: offline players facing direct online competition.

Beneficiaries		Laggards
Offline players with a good supplementary online offering:	Online players with good market positioning:	Offline players facing direct online competition
- EDU	- VIPKID	- RISE
- TAL	- Yuanfudao	- OneSmart
	- Zhangmen 1 on 1	

High online adoption across segments

Technology advancements enable online courses to deliver teaching quality on par with or even superior to offline courses. Online education is widely accepted. Competition still depends on teaching quality and reputation, but the market is likely to be more concentrated. **Beneficiaries**: first-movers in online education with strong teaching quality and reputation. **Laggards** offline players slow to make the transition to online.

Beneficiaries		Laggards
First-movers in online education with strong teaching quality and reputation:		Offline players slow to make transition online:
- VIPKID	- EDU	- RISE
- Yuanfudao	- TAL	- OneSmart
- Zhangmen 1 on 1		

Online education technology advancement **Low**

Online education technology advancement **High**

Status quo

Similar to the current state of the market: parents'/students' acceptance of online remains low, with no breakthrough in technology. The momentum in online settles after initial success from aggressive marketing. Leading offline players like EDU/TAL quickly cut back their online education investments. **Beneficiaries**: current leaders and front-runners in offline tutoring. **Laggards:** pure online players.

Beneficiaries		Laggards
Current leaders in offline tutoring:	Other front-runners in offline:	Pure online players:
- EDU	- RISE	- VIPKID
- TAL	- OneSmart	- Yuanfudao
		- Zhangmen 1 on 1

A failed venture

Technological improvements fail to win parents'/students' acceptance; they still predominantly prefer offline courses. Current momentum in online settles, after initial success from aggressive marketing. **Beneficiaries** : offline players without significant commitment to online. **Neutral**: offline players investing heavily online but their strong offline franchise helps absorb online losses. **Laggards**: pure online players.

Beneficiaries	Neutral	Laggards
Pure offline players:	Offline players with sizable online investment:	Pure online players:
- RISE	- EDU	- VIPKID
- OneSmart	- TAL	- Yuanfudao
		- Zhangmen 1 on 1

Parents'/students' acceptance **Low**

Source: UBS-S estimates

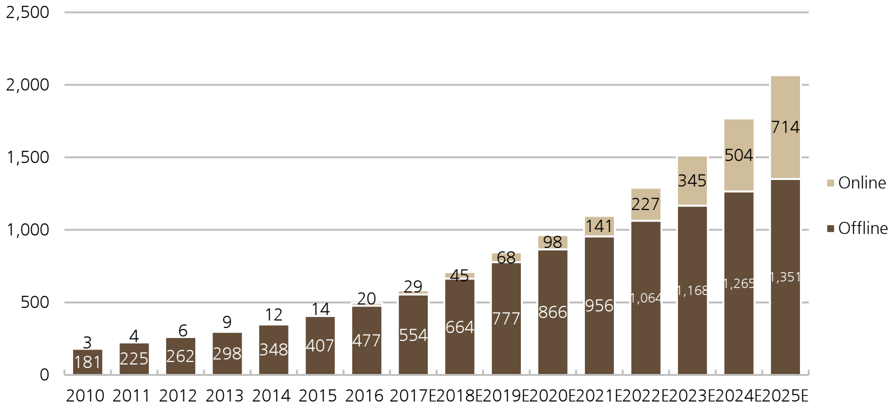
In our base case scenario of high online adoption across segments (the top-right quadrant in Figure 11), we estimate the size of the online K12 afterschool tutoring market will reach Rmb0.7trn, accounting for about 35% of the overall K12 AST market by 2025E, up from the 2017E level of Rmb29bn. Three key drivers underpin this strong growth potential:

(1) Share of afterschool tutoring time spent online reaches about 50%, up from about 13% in 2017E, due to technological breakthroughs improving online teaching quality and high levels of parental acceptance of the online format.

(2) Penetration of afterschool tutoring could increase to about 60%, up from about 40% currently, as online channels deliver high-quality tutoring courses to lower-tier cities and rural areas, where current penetration is low.

(3) An increase in online ASP as improved quality lifts the pricing power of online tutoring providers.

Figure 12: Online AST market – revenue potential, base case (Rmb bn)

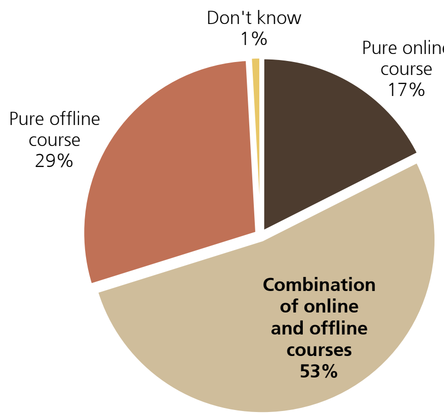


Source: The Chinese Society of Education, China Youth & Children Research Center, China Institute for Educational Finance Research, UNPD, Haver, CEIC, Wind, Company data, UBS, UBS-S estimates

Our base case assumptions may seem optimistic relative to the market's view, but we believe they are achievable.

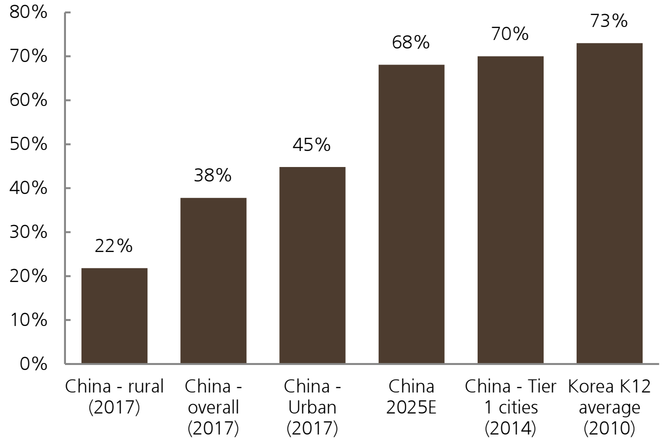
- Our UBS Evidence Lab survey suggests that although offline remains the go-to choice for taking AST courses, 53% of parents are embracing an offline/online combined approach (offline classes with online supplements or dual-teacher classes). We think this part of the market, which is relatively more online-friendly, is likely to embrace the online-only mode in the future, especially as more internet-savvy millennials/Generation Z become parents of K12 students. If half of this group (combined offline-online users) was to switch to pure online AST—due to: 1) better technology improving quality; 2) parents becoming more accepting; 3) savings made by removing travel time to classes; and 4) lower ASP—we are not far from our base case of about 50% of AST study time being spent online by 2025.
- Our estimate of 60% AST penetration in 2025 incorporates a noticeable improvement in penetration in Tier 3/4 and below cities and rural areas, which are home to about 88% of the China's K12 student population. We think high-quality online education will likely unlock the AST market in these regions. Our 2025 penetration estimate is still below the level in China's Tier 1 cities in 2014 and the 2010 level in Korea.
- TAL's and New Oriental's online ASP (revenue per enrolment) is on average one-quarter of that of offline courses. In our view, this is a result of shorter course duration and more aggressive online discounts offered as a means to gain market share. As teaching quality improves, we expect online providers to improve their pricing power. Our base case 2025E online ASP is half of offline ASP, which is reasonable, in our view.

Figure 13: Current AST attendance



Note: Figures have been rebased.
Source: UBS Evidence Lab

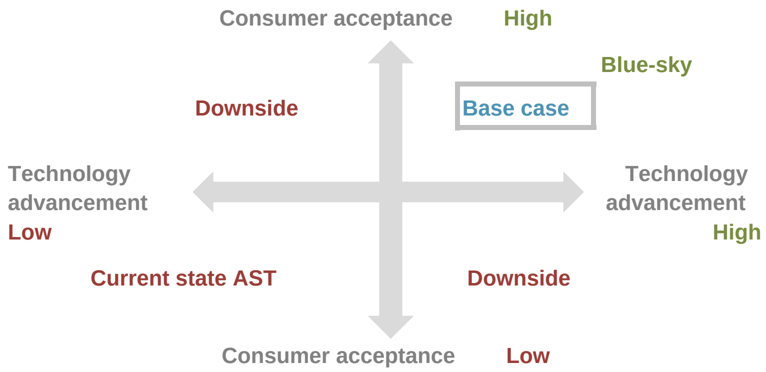
Figure 14: Penetration of K12 AST



Source: China Institute for Educational Finance Research, The Chinese Society of Education, iResearch, UBS-S estimates

Upside and downside scenarios

Figure 15: Summary of online afterschool tutoring scenarios



Source: UBS-S estimates

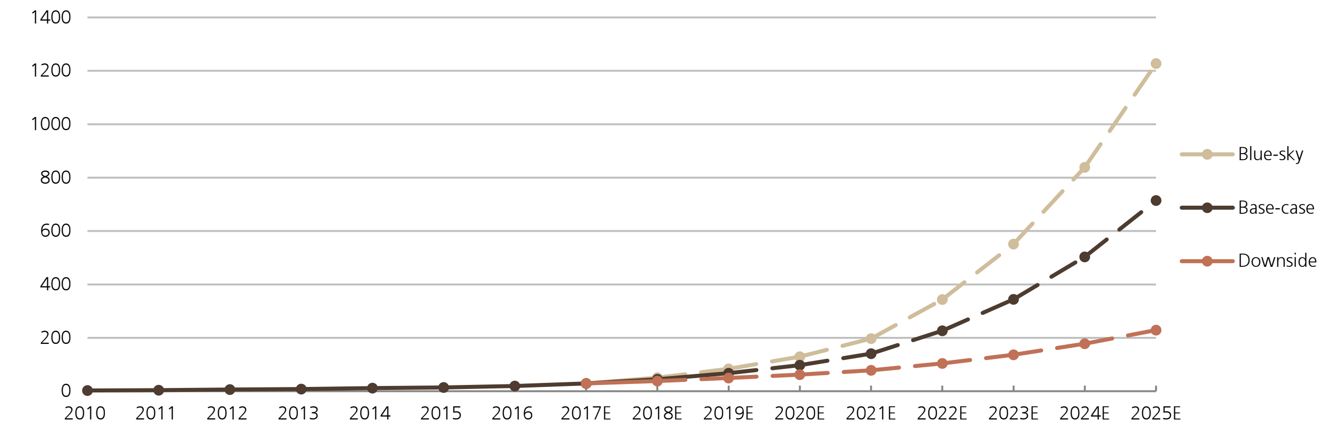
In our blue sky (upside) scenario, we think breakthroughs in technology could enable online classes to deliver *superior* teaching quality compared with offline classes, encouraging the majority of study time to be spent online. In addition, mature online classes could help penetration of afterschool tutoring pick up further in lower-tier cities and rural areas than we expect in our base case.

Our blue sky scenario assumes: 1) students spend 72% of AST time online; and 2) overall penetration of AST is at 68%. In this case, we expect online K12 AST market revenue to reach to Rmb1,227bn, making a 57% contribution to overall AST market revenue.

Our downside scenario is represented by the top-left and bottom-right quadrants in Figure 15, where one of the two key factors (technological advancement and customer acceptance) does not work out as we expect, resulting in a lower share of time spent online and lower afterschool tutoring penetration, especially in lower-tier cities and rural areas. The bottom-left quadrant shows that both factors do not play out as expected, meaning online revenue becomes relatively insignificant.

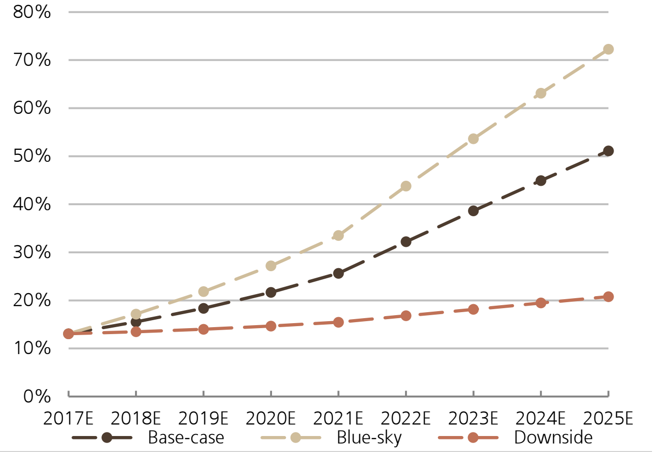
Our downside case assumes: 1) students spend 21% of AST time online; and 2) overall penetration of AST is at 52%. In this case, we expect the online K12 AST market revenue to reach to Rmb229bn, accounting for only 12% of overall market revenue.

Figure 16: Scenario analysis – online K12 afterschool tutoring sector revenue (Rmb bn)



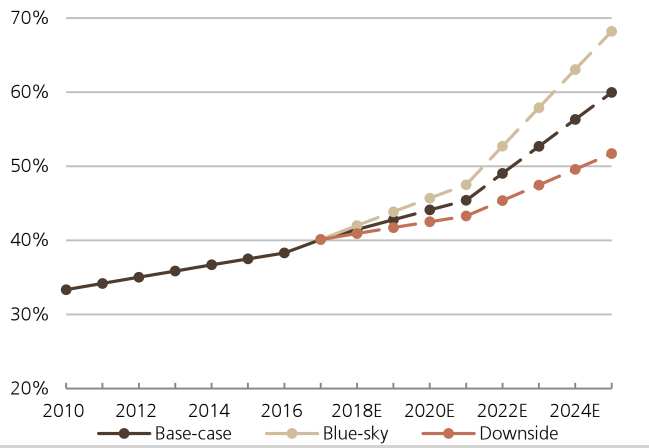
Source: The Chinese Society of Education, China Youth & Children Research Center, China Institute for Educational Finance Research, UNPD, Haver, CEIC, Wind, company data, UBS, UBS-S estimates

Figure 17: Scenario analysis – cumulative AST time spent online



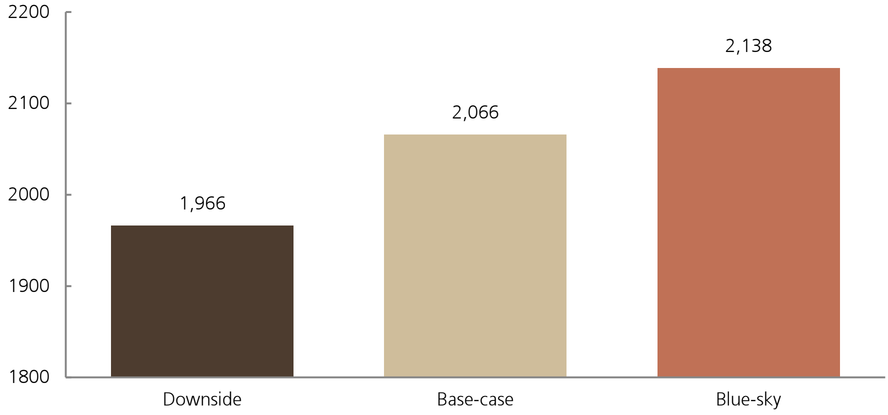
Source: UBS-S estimates

Figure 18: Scenario analysis – penetration of AST



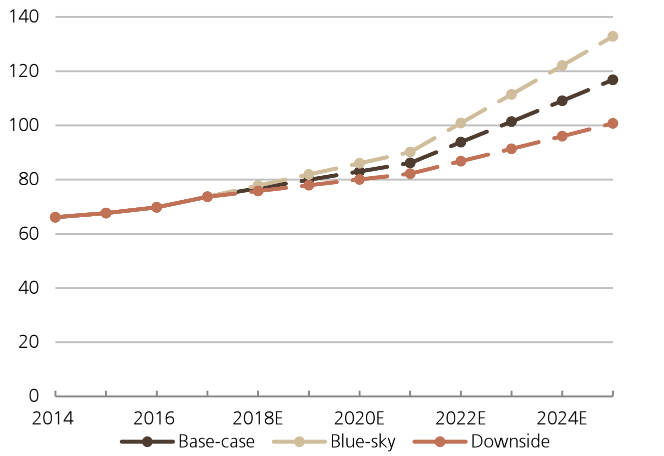
Source: The Chinese Society of Education, China Institute for Educational Finance Research, UBS-S estimates

Figure 19: Scenario analysis – 2025E overall AST market size (Rmb bn)



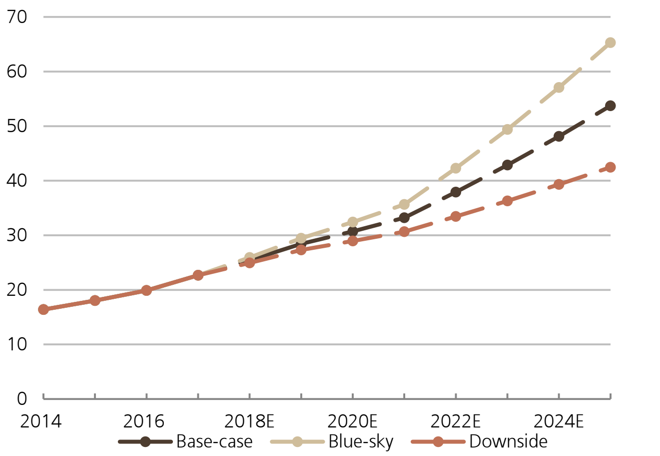
Source: UBS-S estimates

Figure 20: Scenario analysis – K12 AST student base (m)



Source: Ministry of Education, UBS-S estimates

Figure 21: Scenario analysis – student time spent on K12 AST (hours, bn)



Source: China Youth and Children Research Centre, UBS-S estimates

Online transformation may not be a zero-sum game

Leading offline players' online offerings could create a powerful omni-channel to expand the addressable market, with limited cannibalisation of their existing business

Some investors may fear that online transformation in AST could be a zero-sum game, as online cannibalises the existing offline market and, given the lower online ASP, this could mean a reduction in overall AST market size. Based on our industry model (summarised in three market size scenarios in Figure 19), we think online could be accretive to overall AST market size, as it: 1) accelerates AST penetration in lower-tier cities and rural areas; and 2) increases students' available study time for AST (due to time saved on travelling to class).

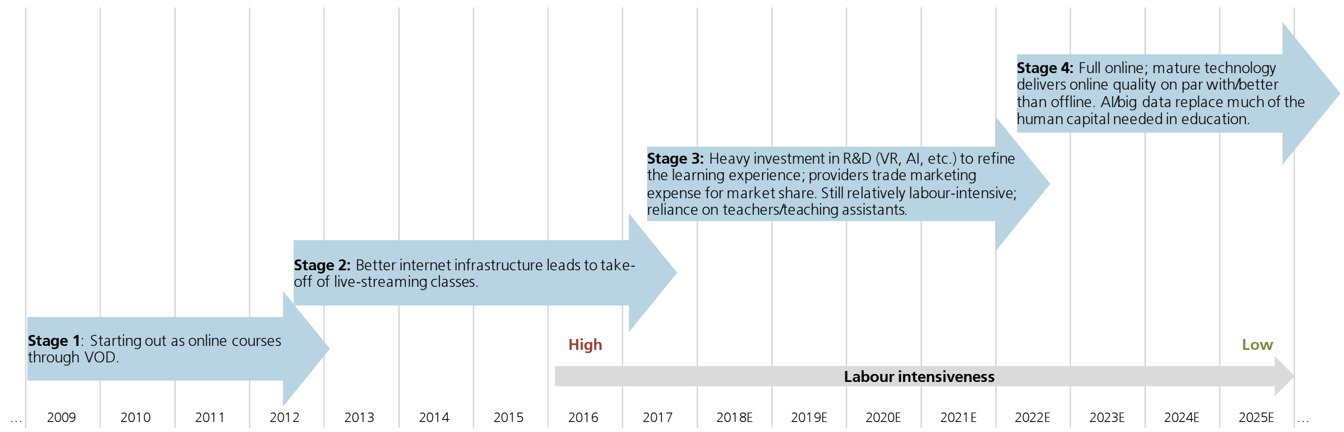
We encourage readers to review and modify these assumptions in our interactive model and gauge the potential impacts.

We believe leading offline players TAL and New Oriental are well positioned through their current online offering (average ASP one-quarter of offline class ASP) to capture a wider market among those whose spending power is relatively low and/or in lower-tier cities where their offline products have yet to reach. Considering each company currently holds less than 2% of China's large AST market, we believe the potential for online to cannibalise their offline business is limited.

Mapping the road to 2025E

We envisage a four-stage development timeline for online K12 afterschool tutoring to evolve towards our 2025E base case scenario.

Figure 22: Online K12 afterschool tutoring market development timeline



Source: CNNIC, Company data, UBS-S estimates

Stage 1 (pre-2009 – 2013): online education in fledgling form

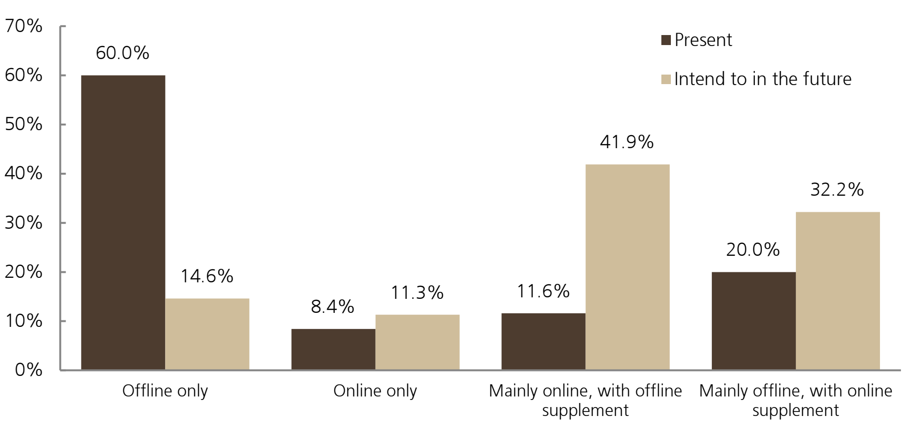
Online education is at a preliminary stage and online videos are the main form of content delivery. TAL and New Oriental offered video-on-demand (VOD) products during this stage of market development.

Stage 2 (2013 – 2017): infrastructure no longer a constraint

Rapid improvements in China's internet speed make live-streaming a viable way of delivering online education content. Pure live-streaming players like 51Talk, VIPKID and TAL/New Oriental launched their businesses during this period.

At this stage, online education has greatest appeal in the English language training (ELT) segment, while penetration in the overall AST market remains relatively low.

Figure 23: Online/offline preference in ELT AST market



Note: Survey carried out in November 2016.
Source: iResearch

Stage 3 (2017 – 2021E): where the battle is won or lost

We expect this will be a stage of heavy investment, both in R&D and marketing, and where fast top-line growth and margin pressure co-exist. This will be the stage where the battle is won or lost, in our view, as first-movers to online education with deep pockets gain and solidify their advantages in technology and market share. We expect major players—both pure online players such as VIPKID and 51Talk, and transitioning offline players like TAL and New Oriental—to invest heavily in R&D and marketing during this period, while teaching quality in online education catches up with the quality of offline classes, or even surpasses it (our blue sky scenario).

Technology breakthroughs in the three areas of AI, VR and facial/emotional recognition will likely push online education beyond the tipping point.

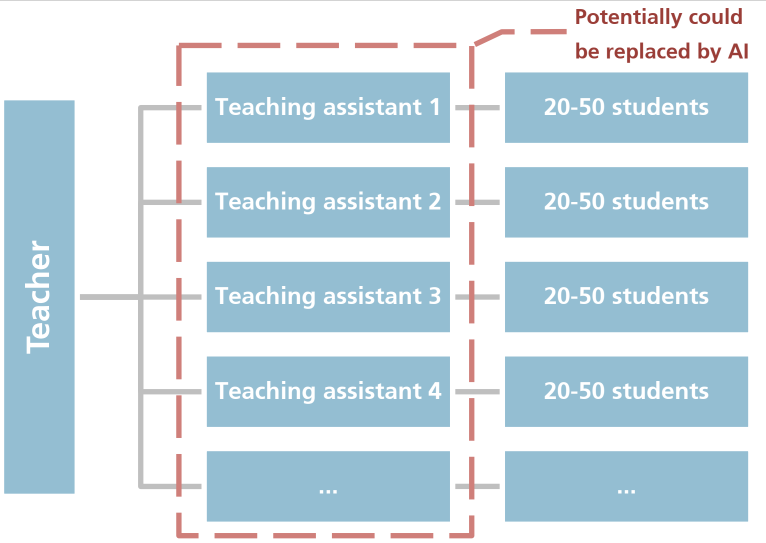
- **AI: the silver bullet for a truly scalable business model?**

  In our view, the trade-off between labour intensiveness and teaching quality has arguably been the biggest roadblock for a truly scalable, high-quality education business model: often, the higher the student/teacher ratio the better the scalability—but the poorer the teaching quality, and vice versa.

  There are successful initiatives to enhance teaching efficiency and raise the student/teacher ratio, such as TAL's and New Oriental's dual teacher classes, and OneSmart's IT system used to scale up 1-on-1 tutoring. But at this stage of delivery, most education business models remain labour-intensive, even for online classes. According to TAL, its current online courses pair one teacher with four to five teaching assistants, each of whom serves 20-50 students.

  We believe AI could be the piece in the puzzle that unlocks the bottleneck for scalable expansion. For example, in TAL's current online classes much of the work currently done by teaching assistants, such as answering basic questions, could, in our view, be substituted by AI. This could potentially result in notable savings in headcount and staff costs.

Figure 24: Current structure of TAL's online classes



Source: Company data, UBS-S

- **VR: blurring the lines between online and offline classrooms?**

In a 30 January 2017 Q-Series report "Is VR becoming an Investment Reality?" UBS's global technology team identified education, among video gaming and digital entertainment, as the sector to drive the first wave of VR adoption. At a more mature stage, we think VR could replicate the offline classroom experience online, helping to narrow the gap.

Encouragingly, the team's UBS Evidence Lab survey revealed the greatest interest in VR in China. Although education lags behind entertainment use, we believe the hardware installations driven by entertainment use could help lay the foundation for VR adoption in online education.

Figure 25: Appeal of various applications for VR

	US	UK	Germany	China	Japan
playing PC/console game	38%	31%	41%	67%	33%
watching video/movie	33%	29%	43%	71%	39%
watching TV program	26%	21%	29%	62%	22%
previewing a residential property	36%	28%	37%	39%	20%
previewing a place of attraction	38%	29%	46%	58%	34%
attending a training course	24%	20%	28%	38%	18%

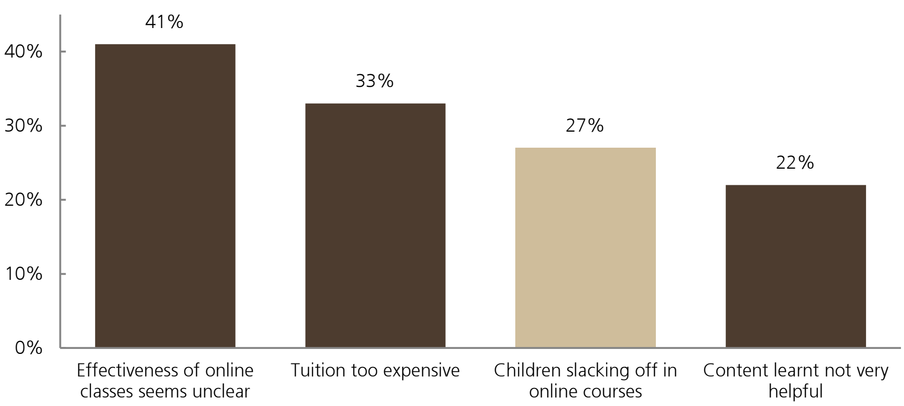
Source: UBS Evidence Lab (Is VR becoming an Investment Reality?, 30 January 2017)

- **Facial/emotional recognition: no more taking it easy in class**

Among parents surveyed by Sina Education, 27% were concerned about children lacking focus ("slacking off") when engaging in online AST courses. This was one of the main concerns regarding online courses.

Advancements in facial/emotional recognition technology and its application in online classrooms could, we believe, encourage improved student attention and focus. An early adopter of this technology is TAL.

Figure 26: Perceived problems with current online K12 afterschool tutoring



Note: Survey carried out in 2017; sample size 33,024 parents.
Source: Sina Education

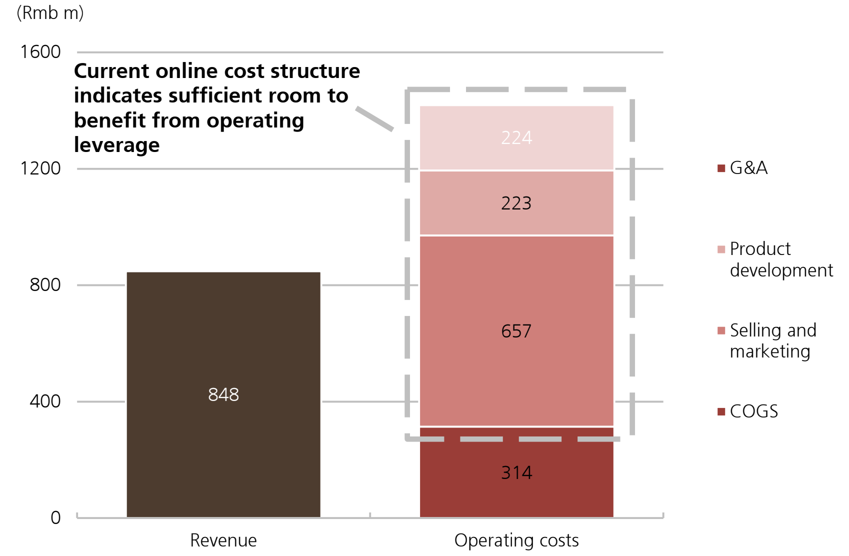
Providers face initial margin pressure from extensive marketing—but this could ease with improved operating leverage and efficiency

We believe online education is in a catch-up phase in terms of teaching quality during this stage, thus marketing expenses are considerable. For example, selling and marketing expenses took up 77% of 51Talk's FY17 revenue, according to the company.

As online education matures and reaches a certain scale, we expect marketing cost per enrolment to come down, especially considering retention. According to TAL, the retention rate for some of its online classes is reaching +70% already.

At the GPM level, online is proven to be more profitable than offline. New Oriental's Koolearn and 51Talk report GPM of more than 60% as a result of a leaner labour structure and fewer offline expenses such as rent. With additional GPM upside from AI deployment and leverage on operating expenses, we estimate online education could be more profitable than offline in the long run.

Figure 27: 51Talk's revenue and cost structure (FY17)



Source: Company data

Stage 4 (2021E – 2025E): reaping the rewards

After heavy investment in R&D during Stage 3, online education technology should be more mature in Stage 4 and able to deliver teaching quality on par with or even superior to offline courses.

With the advantages of greater flexibility in time spent and location than offline options, in addition to comparable quality, we anticipate accelerated adoption of online education at this stage, without the need to rely on aggressive marketing.

For providers, mature technology should reduce the reliance on labour in current online education models and improve operating leverage, making the business truly scalable.

We anticipate the co-existence of rapid top-line growth and superior margins for online than for offline business at this stage.

PIVOTAL QUESTIONS

return ↑

Q: Will K12 online tutoring consolidate into an oligopoly?

UBS-S VIEW

Yes. We expect online education, and more specifically K12 online tutoring, to follow in the footsteps of other online verticals in China and consolidate into a segment with only a handful of major players. As leading offline AST providers, such as TAL and New Oriental, and well-funded "unicorns" (private tech companies valued at US$1 billion or more in China) compete for position in the online education space, staying competitive will require strong R&D and operating capabilities, a solid brand and the financial resources for marketing. If the segment becomes as consolidated as existing online verticals, such as mobile games and e-commerce, the current front-runners in online education, including TAL and New Oriental, could be positioned for significant revenue upside. Each 5% share of the online education market in 2025 could be three times the size of TAL's FY18 revenue, on our estimates.

EVIDENCE

Unlike the offline AST segment, where much of the market is occupied by small "mom & pop shops", online education is more consolidated and institutionalised to begin with, given the high entry barriers of upfront investment in content R&D, IT infrastructure and marketing. Based on data from Wind, companies and our industry model, we estimate the 2017 market share of the top-five players in online K12 AST (VIPKID, Zhangmen, TAL, 51Talk, New Oriental) is 16%, which compares with the 5% market share of the top-five players in the overall market (TAL, New Oriental, Xueda, OneSmart, VIPKID). (Note: not all of the main AST players in China are listed or regularly disclose revenues, thus these market share estimates may not be fully representative.)

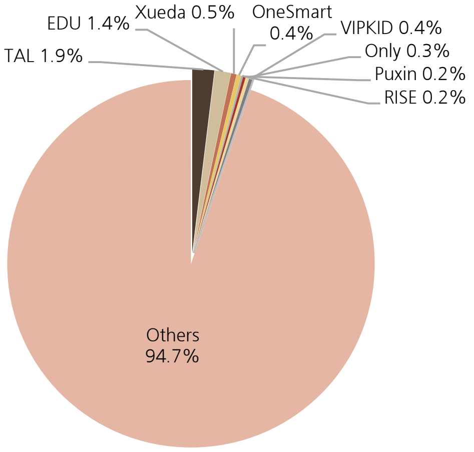
We draw a parallel between K12 online tutoring in China and the mobile games market, given the shared focus and reliance on strong R&D and the platform. UBS internet analyst Angela Xu believes (link) that to stay competitive in mobile games, developers need to have stronger R&D and operating capabilities; high entry barriers make it difficult for small games companies to compete with the market leaders. Against this backdrop, the combined mobile games market share of Tencent and NetEase rose from 11% in 2012 to 56% in 2016.

iResearch's survey of K12 online live-streaming course users suggests that parents' top considerations for online courses are teacher quality and platform experience. This positions TAL and New Oriental well, in our view, since they have a longer track record of training high-quality teachers than their online competitors, as well as sufficient cash flow to fund R&D to develop and refine their online IT infrastructure.

Online K12 afterschool tutoring market: a large pie sliced into fewer pieces

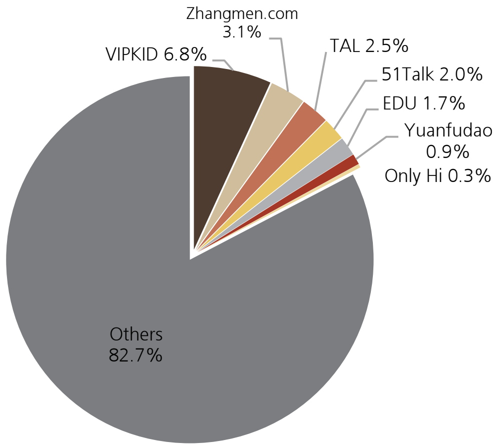
Although still at an early stage, the online K12 AST market is already more consolidated in China than the offline AST market. The high entry barriers of upfront investment in content R&D, IT infrastructure and marketing, make it difficult for smaller, less well-funded players to stay competitive, in our view, while the online platform breaks down geographical barriers to expansion and makes it easier to scale up and develop a nationwide brand.

Figure 28: K12 AST market share (2017)



Source: Company data, UBS-S estimates

Figure 29: Online K12 AST market share (2017)

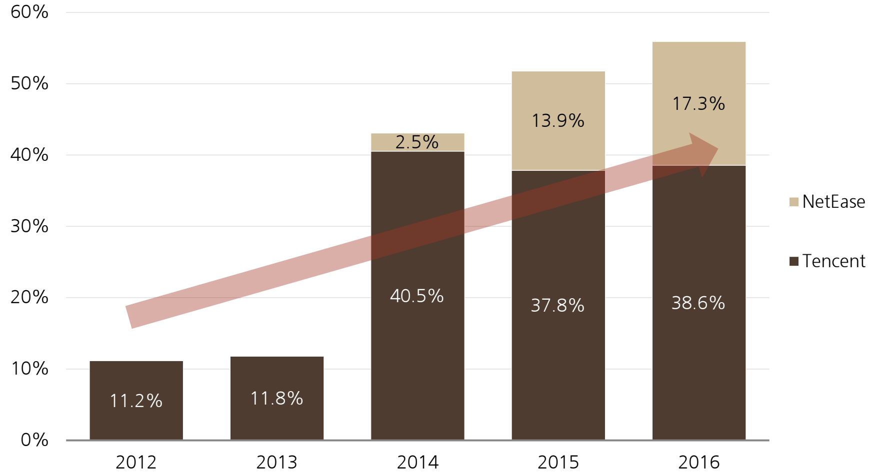


Note: VIPKID: revenue of FY18 (4/1/2017-3/31/2018)
Source: Company data, ITJuzi, UBS-S estimates

In a January 2018 China Strategy Report: Rising industry concentration: why, where and who are the market leaders?, UBS internet analyst Angela Xu commented on mobile gaming, as below. We find this fitting in the context of online education, providing us with a historical reference point for a potential high degree of concentration in China's online K12 AST market.

> "We have observed continued market consolidation in China's mobile games market, with the major games companies Tencent and NetEase gradually taking share from smaller players in recent years. After the initially explosive growth stage driven by users shifting from PC to mobile games, China's gamers began to spend more time on fewer hit games and the market became more focused on a few promising better-quality titles offering a premium user experience. These categories became very competitive, requiring stronger R&D and operating capabilities from games developers, and it became difficult for small games companies to compete with the market leaders."

Figure 30: China mobile games market share, by revenue

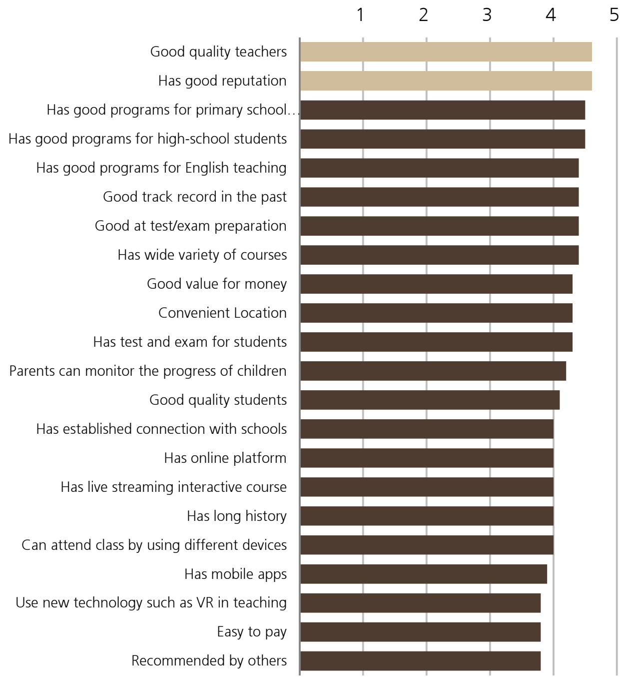


Source: iResearch, Company data

What does it take to succeed in online education?

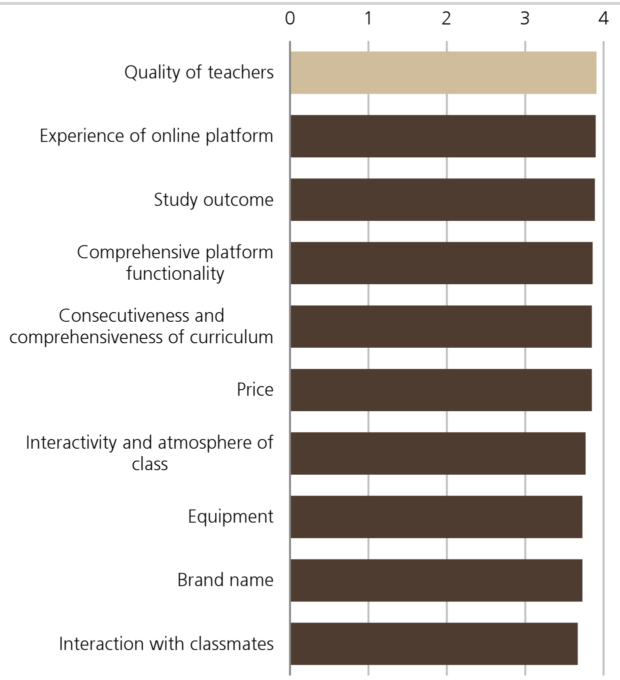
Based on iResearch's survey of parents whose children are enrolled in online live-streaming courses, the two top factors parents care about in online education are: 1) quality of teachers; and 2) user experience of the platform. On the former, leading offline players like TAL and New Oriental are well positioned given their decades of experience in the education industry and development of high-quality teachers. The latter requires a strong commitment to R&D and the financial strength to support it. We think TAL and New Oriental, with their highly cash-generative offline businesses, are also well positioned in this context.

Figure 31: Most important factors in choosing an afterschool programme (overall K12 AST market) – mean values



Note: Respondents were given choices: Very important (5); Somewhat important (4); Neither important nor unimportant (3); Somewhat unimportant (2); and Not important at all (1). Above shows average scores. Source: UBS Evidence Lab

Figure 32: Most important factors in choosing live-streaming classes

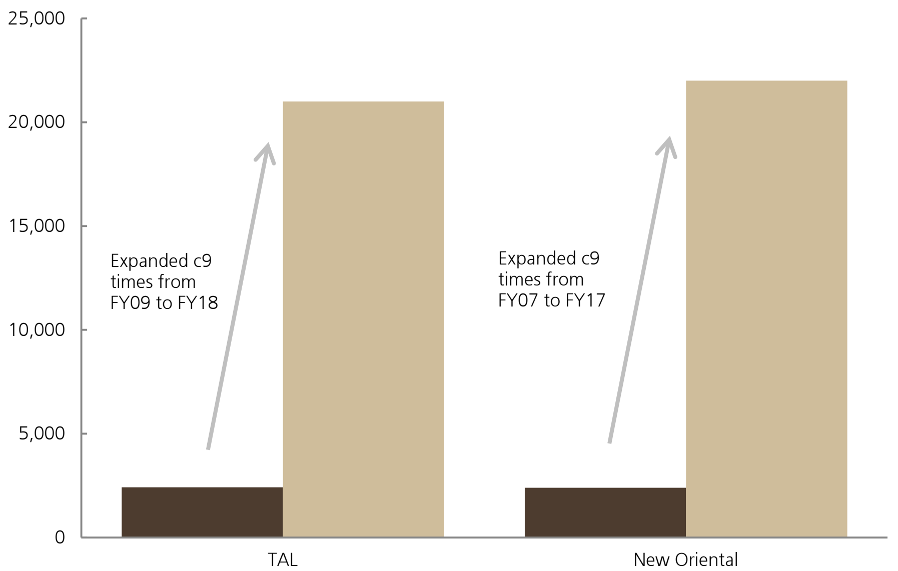


Source: iResearch

Teacher is centre of attention (both online and offline)

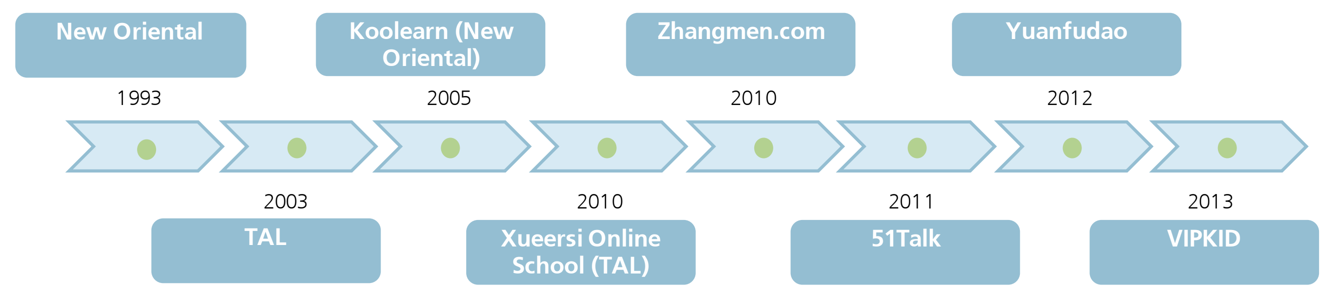
Teacher quality is parents' top consideration for online classes, based on UBS Evidence Lab and iResearch surveys. TAL and New Oriental have among the longest track records in the sector in training high-quality teachers. During the past decade, TAL's and New Oriental's teacher headcount grew by close to nine times, while teaching quality was maintained, based on survey data.

Figure 33: Teacher headcount – TAL and New Oriental



Source: Company data

Figure 34: Timeline of establishment – leading online K12 AST providers



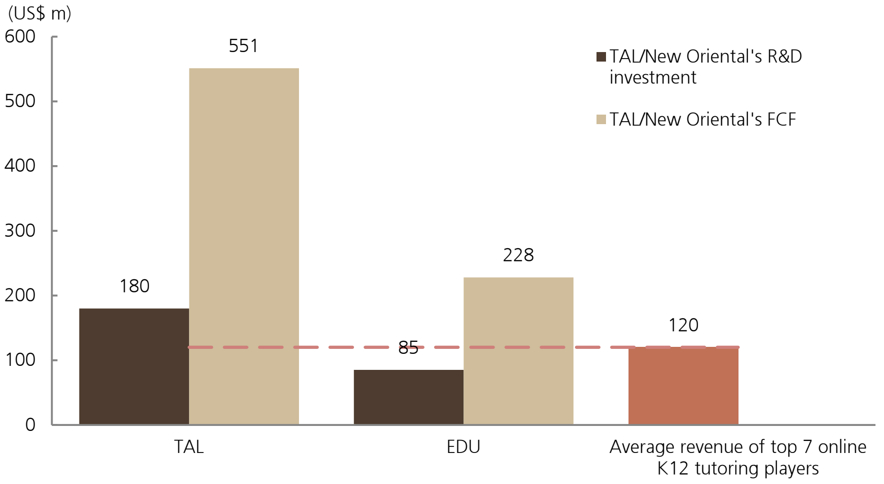
Source: Company data

Deep pockets a must-have for initial investment in R&D…

We think online education is similar to mobile gaming in that R&D and the resulting user experience play an important role in attracting users to the platform and growing market share. According to the iResearch survey, the user experience of the online platform is the second-most important factor for live-streaming classes.

In this regard, we like TAL and New Oriental as their highly cash-generative offline businesses provide sufficient funding for their online ventures. This also increases their competitive advantage over smaller, less well-funded players.

Figure 35: TAL and New Oriental R&D expenses vs average revenue (top-seven online K12 AST companies)

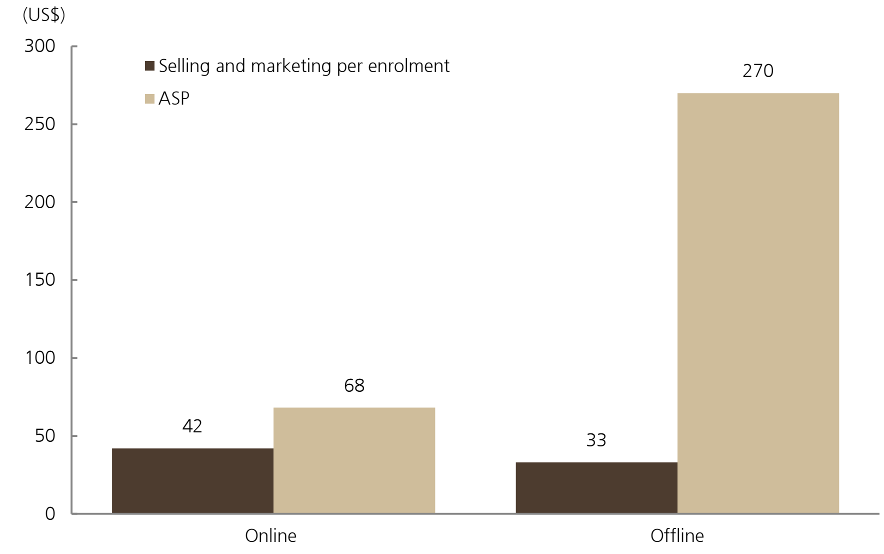


Note: R&D data for TAL and New Oriental based on FY19 guidance; revenue data for top-7 online players are approximate for CY17.
Source: Company data, ITJuzi, UBS-S estimates

....and extensive marketing

The current stage of development in the online K12 AST segment, as described above, is one of catch-up in terms of teaching quality, thus providers need to invest extensively in marketing (Figure 36) to expand the customer base sufficiently to ensure future success. This is also a cash-intensive stage, requiring financial strength.

Figure 36: TAL – at current stage of development, online businesses require extensive marketing support (FY19E)



Source: Company data, UBS-S estimates

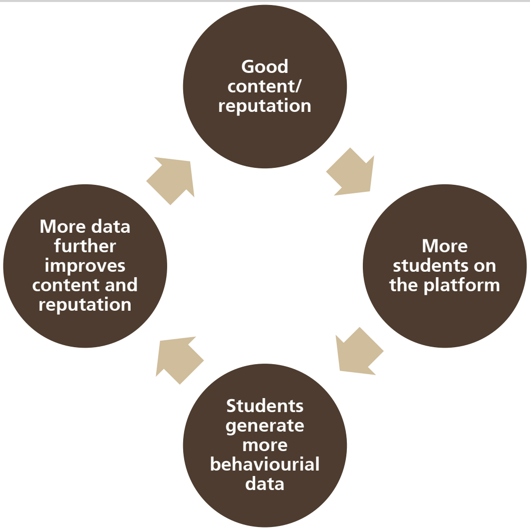
AI's virtuous cycle makes scale increasingly important

As well as potentially unlocking a capacity bottleneck for expansion, the use of AI technology will create a virtuous cycle, we believe, making leading online players potentially "too big to fail".

We borrow insights from UBS's global semiconductors team in their 4 April 2018 report "If 'Data is the New Oil', is AI the New Internal Combustion Engine?"—namely, that the better reputation and content a platform has, the more users it attracts.

In education, more students generate more user data, which in turn helps the platform improve its AI algorithms and further improve teaching content. We think this virtuous cycle makes scale increasingly important and will likely contribute to sector consolidation.

Figure 37: AI's virtuous cycle in education



Source: UBS-S

How are TAL and New Oriental positioned in the race for online expansion?

As leading education providers known for their offline businesses, TAL and New Oriental benefit from their: 1) first-mover advantage over other traditional offline players; 2) nationwide reputation, including track record of teaching quality, years of operational experience and content development, as well as an existing customer base compared with online providers; and 3) R&D investment. Through strategic investment as well as organic expansion, TAL and New Oriental have established their own online education ecosystems and are well positioned to compete in the race for online expansion, in our opinion.

First movers among traditional offline players

TAL and New Oriental were early entrants to China's online education market (at Stage 1 in our Figure 22 development timeline), and have advanced their product offering in line with improvements in internet technology since then. In 2017, TAL and New Oriental held a combined 4.2% share in the online K12 AST market, on our estimates.

TAL's online business more than doubled YoY, contributing 7% of revenue and about 25% of enrolment in FY18, according to the company. New Oriental's online revenue accounted for 3.3% of the total in FY17, based on company data, with more than a 50% increase in paid users YoY.

Figure 38: New Oriental – online business history

2005	Established www.koolearn.com
2011	Launched 8 learning apps based on iOS system
2012	Launched Dooonut with app and live courses for children aged 2-8
2016	Received Rmb320m in strategic investment from Tencent
2016	Established DFUB, offering K12 live location-based online courses (LBOC)

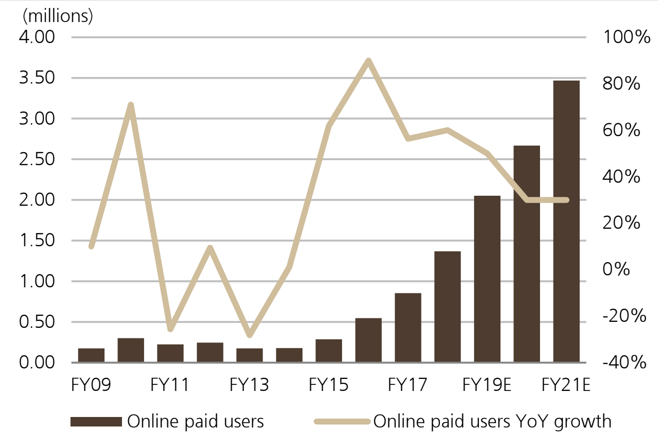
Source: Company data

Figure 39: TAL – online business history

2010	Launched www.xueersi.com
2013	Brought in "recorded + live" teaching model
2015	Introduced new TEPC (teaching, examination, practice and communication) flipped classroom format, which then was developed into live-streaming classes
2016	Updated online courses using format of "small live class + individual tutoring"
2017	Introduced technologies including facial recognition and voice recognition into classroom

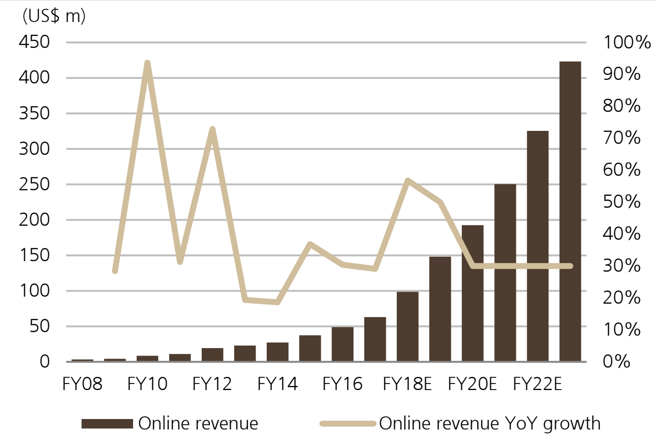
Source: Company data

Figure 40: New Oriental – online paid users



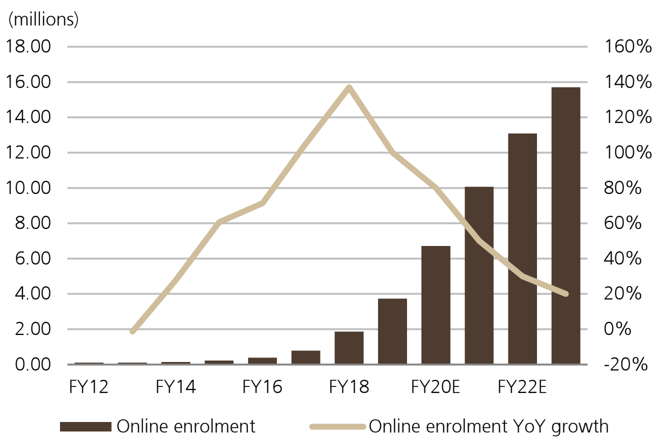
Source: Company data, UBS-S estimates

Figure 41: New Oriental – online revenue



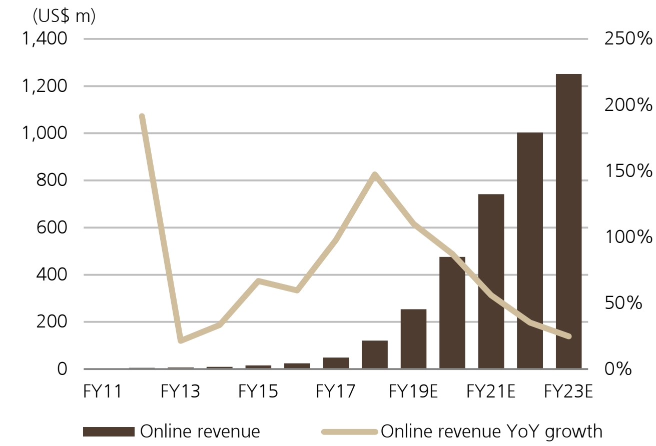
Source: Company data, UBS-S estimates

Figure 42: TAL – online enrolment



Source: Company data, UBS-S estimates

Figure 43: TAL – online revenue



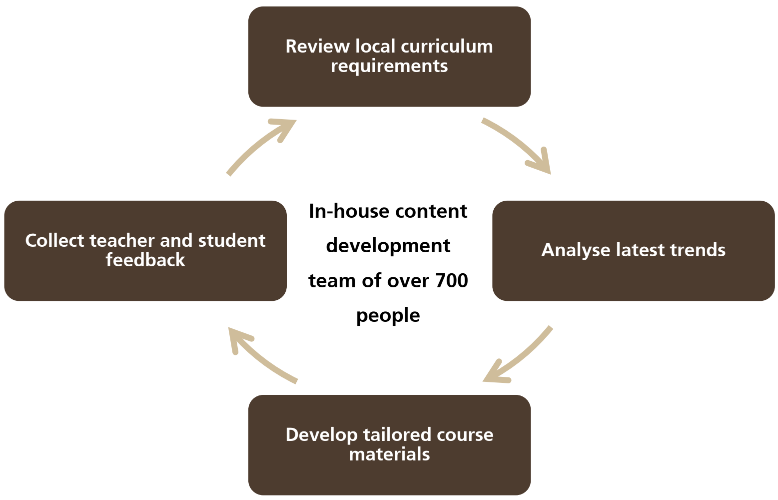
Source: Company data, UBS-S estimates

Capitalising on offline business success

With years of operating experience (New Oriental was founded in 1993 and TAL in 2003), the two companies have expanded to become well-recognised brands offering students strong teaching outcomes. Although there are differences in the way content is delivered between offline and online platforms, we believe the online businesses of TAL and New Oriental will benefit from the years of experience accumulated in developing offline content, growing the customer base and establishing a mature teaching system.

High-quality content developed from offline materials is one of the core competitive strengths of TAL and New Oriental in the online market, in our view. Compared with new online players (most established since 2010), TAL and New Oriental's content has been optimised and tested over a longer period.

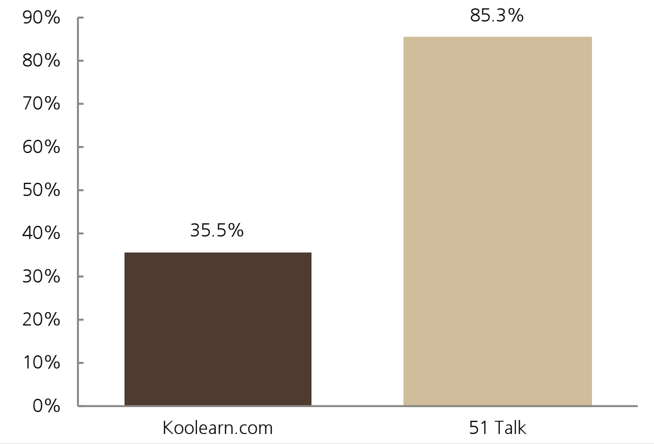
Figure 44: TAL's content development system



Source: Company data

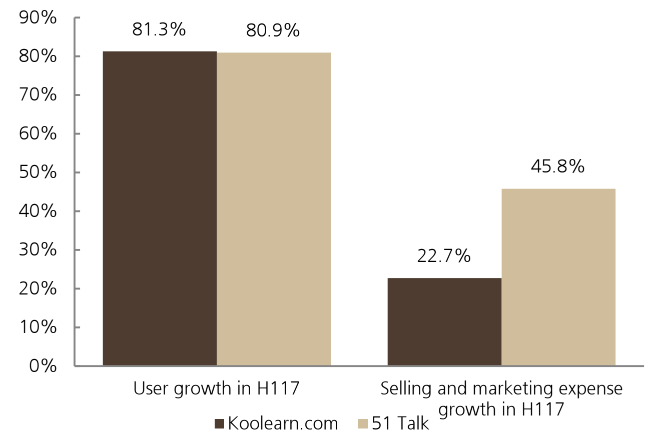
In addition, a nationwide brand name and reputation in the offline business will help TAL and New Oriental attract customers more easily, in our view, and likely result in lower customer acquisition costs than their pure online competitors.

Figure 45: Koolearn vs 51Talk: lower percentage of selling & marketing expense in total revenue



Source: Company data

Figure 46: Koolearn vs 51Talk: lower incremental cost to acquire customers (YoY)



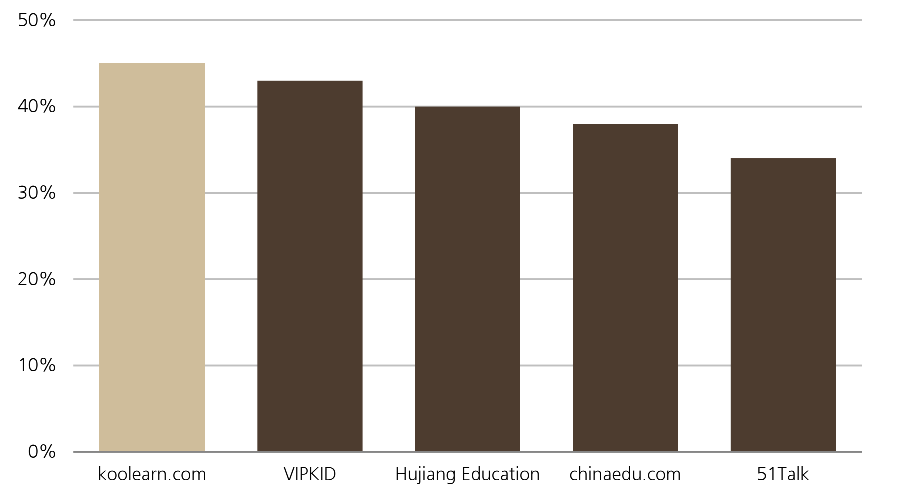
Source: Company data

Offline know-how translating into high online quality

Moreover, as providers of the two largest platforms in China's K12 AST market, TAL and New Oriental have been able to recruit teachers with strong backgrounds in education and maintain high teaching quality through the use of a mature teaching system. Given that most pure online providers are using one-to-one teaching formats (more teachers and a larger proportion of part-time teachers), we believe TAL and New Oriental can perform better teaching quality control.

According to our November-December 2017 UBS Evidence Lab survey, parents recorded a high level of satisfaction with Koolearn.com, New Oriental's online platform.

Figure 47: Satisfaction with online AST programmes



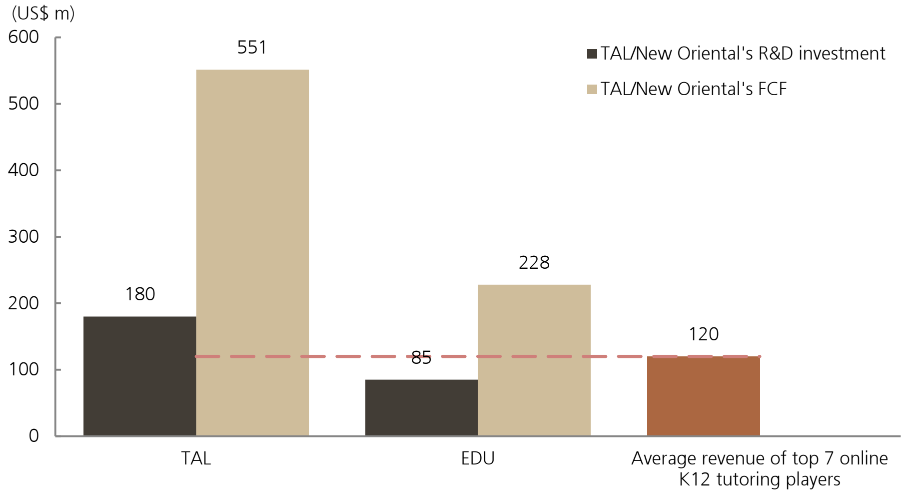
Note: % of parents who are 'Very satisfied' with respective afterschool programme. Data for "Chinaedu.com" is based on a small sample size.
Source: UBS Evidence Lab

Commitment to R&D will likely extend the competitive advantage

As demands for interactivity, individualisation and convenience in education products increase, TAL and New Oriental have successfully kept up, launching and updating interactive education systems to optimise the student learning experience and to enhance efficiency of delivery. These initiatives will play an increasingly important role in online classes.

Healthy cash flows from robust offline business are also helping TAL and New Oriental to stay ahead in terms of R&D. According to management, TAL intends to expand its R&D team from the current 4,000 people to 10,000 people within five years—a level of commitment that we believe would be hard for smaller players to match.

Figure 48: TAL and New Oriental R&D expenses vs average revenue (top-seven online K12 AST companies)



Note: R&D data for TAL and New Oriental based on FY19 guidance; revenue data for top-7 online players are approximate for CY17.
Source: Company data, ITJuzi, UBS-S estimates

Ecosystem merging online and offline resources

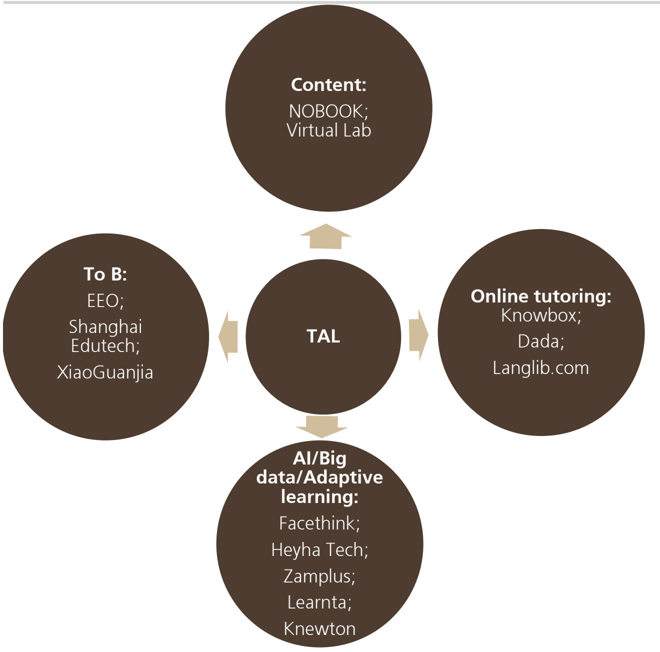
Besides internal R&D investment, TAL and New Oriental have been actively seeking investment opportunities in educational technology-related start-ups, and have leveraged synergies to further upgrade products and offerings. For example, TAL cooperated with Facethink to develop its "Magic Mirror" system, which applies AI technology to capture status and emotion data from students, while NOBOOK Virtual Lab also participated in developing TAL's Xueersi Online School science curriculum.

Figure 49: TAL's innovative products

ITS (intelligent teaching system)	• Developed since 2007, in three generations; investment of over Rmb100m. Incorporates motion-sensing, 3D and other advanced technologies.
Xueersi Cloud	• Mobile learning system covering five major study modes from preview to review. Provides individual study plans for each student.
Magic Mirror	• Launched in 2017. Developed based on facial recognition technologies to collect status of students in class.
Courseware master	• Breaking down topics into smaller parts for teachers in different regions to recombine, in order to fit curriculum differences in each regions.

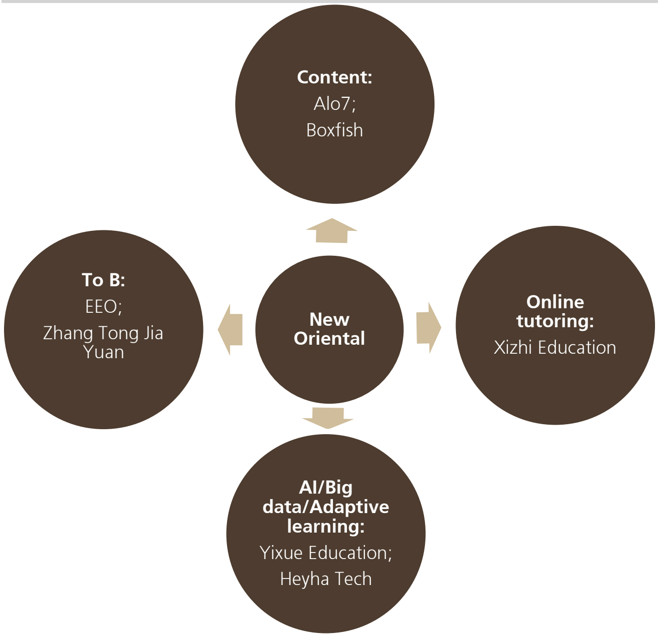
Source: Company data

Figure 50: TAL's online ecosystem (investments)



Source: ITJuzi

Figure 51: New Oriental's online ecosystem (investments)



Source: ITJuzi

Figure 52: TAL and New Oriental – major strategic investment in tech-related start-ups

	Investment year	Area	Details
TAL			
NOBOOK Virtual Lab	2016	Content developer	Virtual experiments developer for K12 stage
EEO	2017	Platform developer	Online classroom platform developer
Knowbox	2015	Online tutoring	App providing exercises database and online platform for homework
DaDa	2018	Online tutoring	Online 1x1 English tutoring provider for students aged 5-16
www.langlib.com	2016	Online tutoring	Interactive English learning platform
Heyha Tech	2015	Motion-sensing and speech recognition	Education software developer using motion-sensing technology and automatic speech recognition
Shanghai Edutech	2015	Platform developer	High-tech enterprise focusing on development of smart school system
Facethink	2017	AI	AI tech company focusing on affective computing and emotion analysis
Zamplus	2016	Big data	Tech company engaged in big data application
Learnta	2016	AI+education	Tech company engaged in learning technology and analytics
XiaoGuanjia	2015	Platform developer	Information technology solutions provider for educational institutions
Knewton	2016	Adaptive learning	Integrated adaptive courseware provider for colleges across North America
New Oriental			
Yixue Education	2016	Adaptive learning	First company specialising in intelligent adaptive education in China
EEO	2017	Platform developer	Online classroom platform developer
Alo7.com	2012	Content developer	Largest K12 digital English language training content producer and solution provider in China
Boxfish	2018	Content developer	Mobile English learning system provider
Heyha Tech	2015	Motion-sensing and speech recognition	Education software developer using motion-sensing technology and automatic speech recognition
Xizhi Education	2018	Online tutoring	K12 adaptive learning platform
Zhang Tong Jia Yuan	2016	Platform developer	Major product Zhang Tong Jia Yuan, an Internet+ education management system for kindergartens

Source: Company data, ITJuzi

WHAT'S PRICED IN?

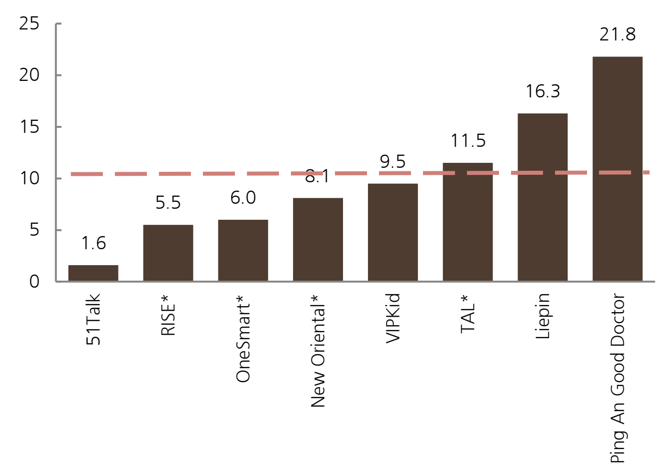
return ↑

Based on recent conversations with investors, we believe the market has yet to reach a consensus on the long-term growth potential of online education, which is still at an early stage of development.

TAL and New Oriental, which we believe will be the key beneficiaries of an online transformation in education in China, are in a similar position to other early movers to online in traditionally offline-dominated verticals—for example, Ping An Good Doctor in healthcare and Liepin in recruitment—but they are trading at noticeable discounts in terms of price-to-sales.

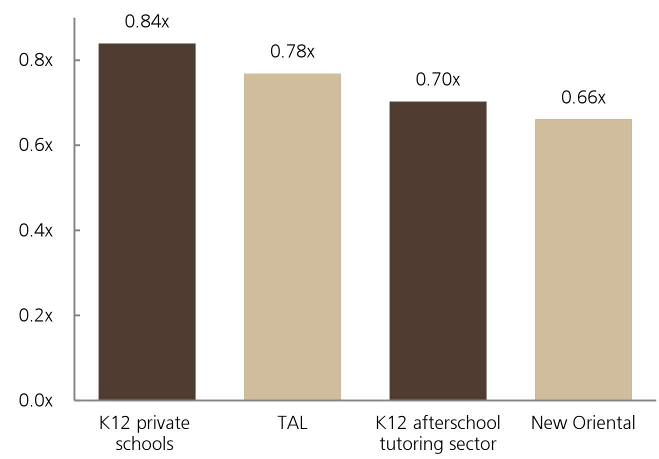
TAL and New Oriental are also trading at a slight discount to listed K12 private schools, which have much less online exposure. We believe the market is not pricing in TAL's and New Oriental's strong positioning for expansion in online education.

Figure 53: P/S comparison (x)



* Covered by UBS-S. Based on last reported financials.
Source: Company data, Thomson Reuters, ITjuzi

Figure 54: PEG comparison



Note: PEG refers to FY2E PE divided by FY1-3E EPS CAGR. FY1 means the first forecast year, and so on. Refer to Figure 53 for list of companies included in K12 private schools and K12 afterschool tutoring sector.
Source: Thomson Reuters, UBS-S estimates

Figure 55: China education sector – valuation comparison

Company		Price	Mkt cap	30-d ADV	PE			P/BV	ROE	EPS growth			EPS CAGR	PEG
name	Ticker	(LC)	(US$m)	(US$m)	FY1E	FY2E	FY3E	FY1E	FY1E	FY1E	FY2E	FY3E	(FY0-FY3)	
K12 Afterschool Tutoring														
TAL*	TAL.N	37.02	19,756	74.9	60.8x	38.9x	26.1x	12.9x	21.3%	47.1%	56.1%	48.9%	50.7%	0.8x
New Oriental*	EDU.N	91.71	14,501	36.4	32.1x	23.5x	17.6x	7.9x	19.0%	36.8%	36.6%	33.3%	35.6%	0.7x
OneSmart*	ONE.N	11.96	1,949	1.3	27.4x	23.8x	17.5x	7.9x	41.1%	39.9%	36.8%	36.1%	37.6%	0.6x
RISE*	REDU.O	14.09	851	4.4	29.7x	21.8x	16.1x	11.0x	45.3%	28.9%	36.6%	35.3%	33.6%	0.6x
Puxin Education	NEW.N	18.75	1,748	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Four Seasons Education	FEDU.N	5.20	125	0.1	18.0x	11.9x	8.8x	2.2x	12.1%	19.8%	51.8%	35.5%	35.1%	0.3x
China Online Education	COE.N	10.17	206	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xiamen Unigroup Xue	000526.SZ	28.18	409	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shanghai Xin Nanyang	600661.SH	23.20	1,003	6.1	40.3x	31.3x	26.0x	NA	9.2%	31.5%	28.8%	20.1%	26.7%	1.2x
Average			4,505	15.4	34.7x	25.2x	18.7x	8.4x	24.7%	34.0%	41.1%	34.9%	36.5%	0.7x
Private Schools (K12)														
China Maple Leaf	1317.HK	13.20	2,507	16.4	30.3x	24.4x	19.8x	5.2x	18.7%	19.5%	24.2%	23.2%	22.3%	1.1x
Virscend Education	1565.HK	5.08	2,001	1.3	32.2x	23.4x	16.9x	4.4x	14.3%	31.8%	37.5%	38.4%	35.9%	0.7x
Wisdom Education	6068.HK	6.60	1,719	5.8	35.5x	26.8x	21.3x	5.6x	16.4%	42.2%	32.3%	25.7%	33.2%	0.8x
China Yuhua Education	6169.HK	5.21	2,169	11.2	NA	20.6x	17.8x	4.3x	NA	33.2%	34.7%	15.2%	27.4%	0.8x
Bright Scholar Education	BEDU.N	16.00	2,036	1.3	46.5x	32.0x	25.6x	4.7x	13.8%	38.0%	45.5%	24.8%	35.9%	0.9x
Hailiang Education	HLG.O	79.74	2,049	5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Average			2,080	6.9	36.1x	25.4x	20.3x	4.9x	15.8%	32.9%	34.9%	25.5%	30.9%	0.8x
Private Universities														
Minsheng Education	1569.HK	1.81	927	3.5	17.3x	14.9x	13.9x	1.7x	10.2%	26.6%	16.2%	6.7%	16.2%	0.9x
China New Higher Education	2001.HK	6.88	1,255	11.3	24.3x	19.2x	15.3x	4.0x	17.1%	35.4%	27.0%	24.9%	29.0%	0.7x
China Education Group	0839.HK	12.56	3,235	15.6	33.4x	24.3x	22.1x	3.5x	10.6%	11.7%	37.8%	9.9%	19.7%	1.2x
Average			1,806	10.1	25.0x	19.4x	17.1x	3.0x	12.6%	24.6%	27.0%	13.8%	21.6%	0.9x
Kindergartens														
RYB Education	RYB.N	19.58	572	1.6	63.5x	23.9x	17.6x	5.4x	9.0%	24.2%	165.3%	35.9%	64.9%	0.4x
Average			572	1.6	63.5x	23.9x	17.6x	5.4x	9.0%	24.2%	165.3%	35.9%	64.9%	0.4x
Professional Training														
Cross-Harbour Holdings	0032.HK	13.10	623	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
China Chuanglian Education	2371.HK	0.08	53	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
China E-Information Technology	8055.HK	0.27	129	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
China Distance Education	DL.N	7.40	246	0.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tarena International	TEDU.O	7.88	445	2.8	63.9x	11.9x	10.5x	1.8x	(2.6%)	(74.1%)	438.9%	12.5%	16.2%	0.7x
Lincoln Educational Services	LINC.O	1.69	42	0.1	NA	18.8x	NA	NA	NA	(69.5%)	(164.3%)	NA	NA	NA
Average			256	0.5	25.9x	15.3x	10.5x	1.8x	(2.6%)	(71.8%)	137.3%	12.5%	16.2%	0.7x

Note: * Covered by UBS-S. FY1 means the first forecast year, and so on. Price data as of the market close on 5 July 2018.
Source: Thomson Reuters, UBS-S estimates

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For this report, UBS Evidence Lab conducted an online survey of 1,200 respondents who are parents with children currently in primary school, junior high school and high school, and also attending afterschool tutoring programmes. The survey covered Tier 1-4 cities in China. The survey was conducted in November-December 2017. Quotas are set based on school year of children and tier of cities. The margin of error for 1,200 sample responses is +/-2.74%.

For data used in Figure 25 of this report, UBS Evidence Lab conducted an online survey with 5,156 middle- and high-income consumers in the US, the UK, Germany, Japan and China (tier 1-2 cities). Respondents surveyed were aged 18-44, responsible for deciding to purchase/not to purchase VR headsets, gaming PCs and consoles as well as to fund all/part of the purchase. The survey did not specifically target PC/console gamers. Conducted from October 18 to October 28 2016, conclusions based on the total sample of adults for each market have a potential sampling error of just +/-2.57% at a 90% confidence level.

Valuation Method and Risk Statement

We derive our price targets for New Oriental, TAL, OneSmart and RISE from a three-stage-DCF model.

We believe the key risks to China's K12 afterschool tutoring sector include: 1) risks from changes in education policies; 2) changes in parent/student studying preferences; and 3) rising competition from new entrants.

We believe risks to New Oriental include: 1) weaker-than-expected acceptance of its non-English courses; 2) weaker-than-expected interest in studying abroad; 3) weaker enrolment growth, resulting in slower top-line growth and weaker learning centre utilisation; 4) policy risk (eg, government initiatives to discourage K12 afterschool tutoring services); 5) weaker-than-expected student and parent acceptance of its O2O initiatives and/or dual-teacher model; 6) rising competition; and 7) investigation into its overseas test preparation and consulting business.

We believe risks to TAL include: 1) inability to maintain consistent teaching quality during rapid expansion; 2) weaker enrolment growth, resulting in slower top-line growth and weaker learning centre utilisation; 3) policy risk (eg, government initiatives to discourage K12 afterschool tutoring services); 4) weaker-than-expected student and parent acceptance of its technological initiatives and/or dual-teacher model; and 5) competition risks.

We believe risks for OneSmart include: 1) inability to maintain consistent teaching quality and therefore premium pricing; 2) inability to achieve/manage rapid expansion; 3) weaker enrolment growth resulting in slower top-line growth and weaker learning centre utilisation; 4) policy risk (e.g., government initiatives to discourage K12 afterschool tutoring services); and 5) competition risks.

We believe risks to RISE include: 1) stronger-than-expected competition in the junior ELT market, especially from online providers, resulting in slower enrolment growth and lower margins; 2) mismanagement of its learning centre expansion; 3) failure to maintain consistent and high standards at its franchisees; 4) policy risk (eg, government initiatives to discourage K12 afterschool tutoring services); and 5) weaker-than-expected student and parent acceptance of its subject-based, all-English course design.

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Sell	FSR is > 6% below the MRA.	15%	12%
Short-Term Rating	**Definition**	**Coverage[3]**	**IB Services[4]**
Buy	Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%
Sell	Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%

Source: UBS. Rating allocations are as of 31 March 2018.
1:Percentage of companies under coverage globally within the 12-month rating category.
2:Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.
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4:Percentage of companies within the Short-Term rating category for which investment banking (IB) services were provided within the past 12 months.

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UBS Securities Co. Limited: Edwin Chen, CFA; Felix Liu.

Company Disclosures

Company Name	Reuters	12-month rating	Short-term rating	Price	Price date
New Oriental Education & Technology[16]	EDU.N	Buy	N/A	US$91.71	05 Jul 2018
OneSmart International Education[2, 4, 16]	ONE.N	Buy	N/A	US$11.96	05 Jul 2018
RISE Education[2, 4, 6, 16]	REDU.O	Buy	N/A	US$14.09	05 Jul 2018
TAL Education Group[13, 16]	TAL.N	Buy	N/A	US$37.02	05 Jul 2018

Source: UBS. All prices as of local market close.
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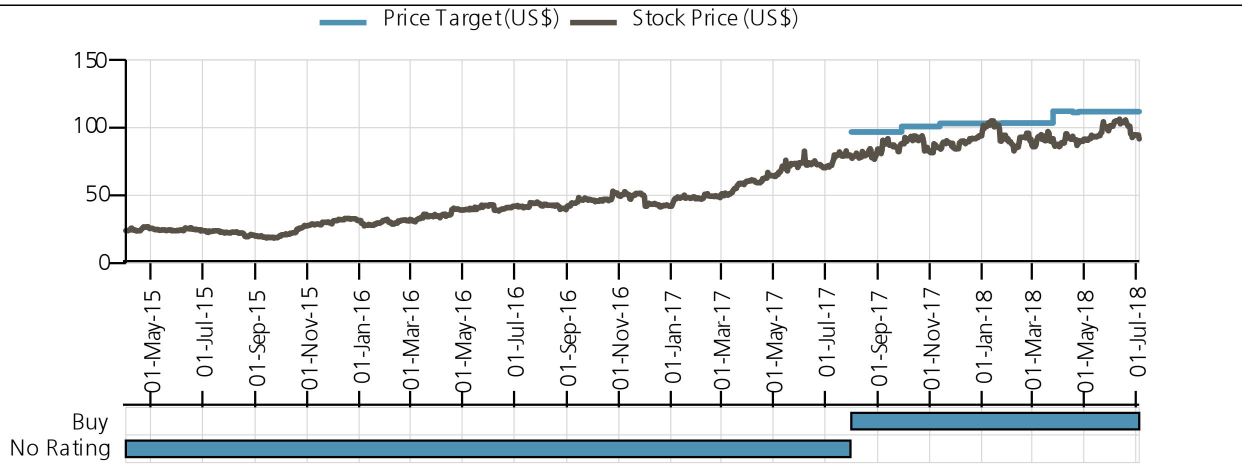
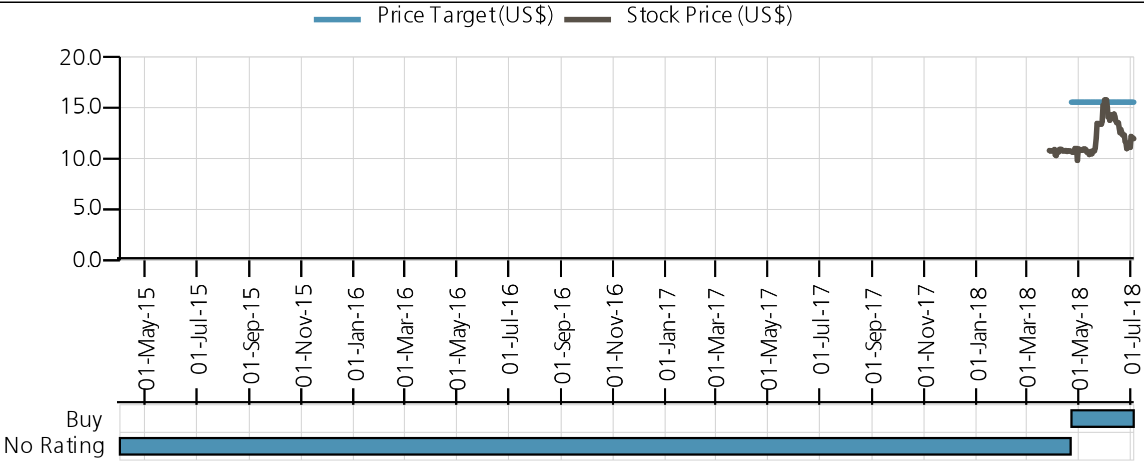
New Oriental Education & Technology (US$)



Date	Stock Price (US$)	Price Target (US$)	Rating
2015-04-02	24.04	-	No Rating
2017-08-01	78.11	96.75	Buy
2017-09-29	88.26	100.9	Buy
2017-11-13	84.58	103.17	Buy
2018-01-24	90.02	103.44	Buy
2018-03-26	91.78	112.05	Buy
2018-04-18	93.65	111.17	Buy
2018-04-25	88.47	111.82	Buy

Source: UBS; as of 05 Jul 2018

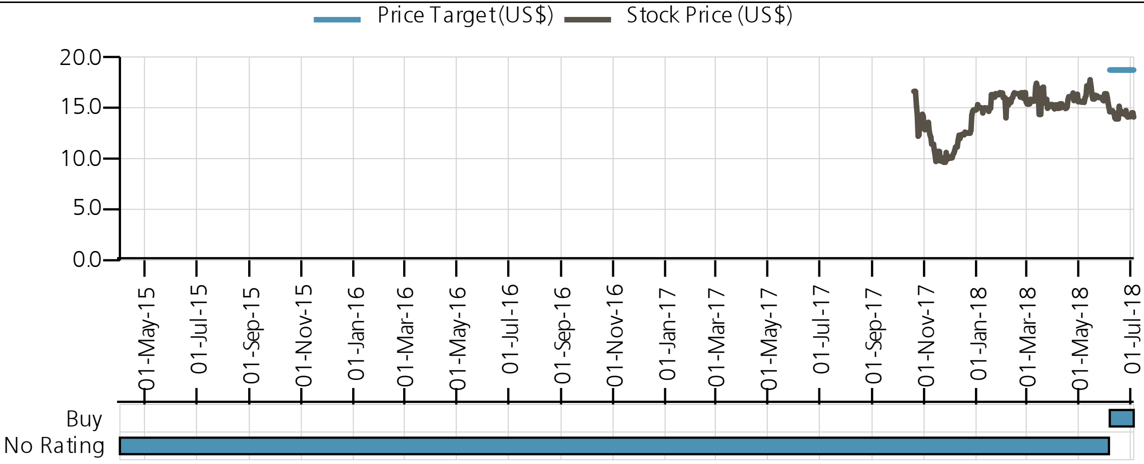
OneSmart International Education (US$)



Date	Stock Price (US$)	Price Target (US$)	Rating
2015-04-02	NaN	-	No Rating
2018-04-23	10.7	15.55	Buy

Source: UBS; as of 05 Jul 2018

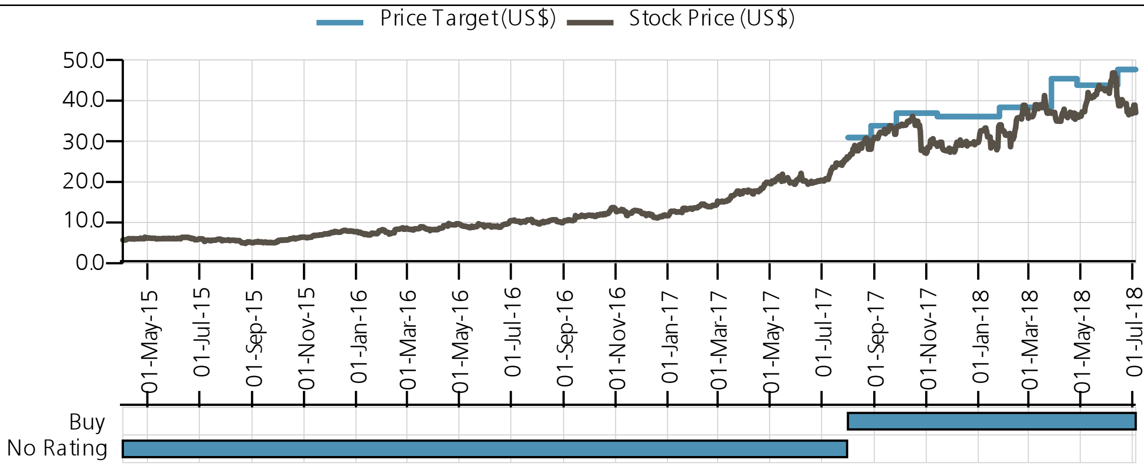
RISE Education (US$)



Date	Stock Price (US$)	Price Target (US$)	Rating
2015-04-02	NaN	-	No Rating
2018-06-07	14.6	18.72	Buy

Source: UBS; as of 05 Jul 2018

TAL Education Group (US$)



Date	Stock Price (US$)	Price Target (US$)	Rating
2015-04-02	5.72	-	No Rating
2017-08-01	25.86	30.92	Buy
2017-08-28	28.03	33.83	Buy
2017-09-27	33.21	36.94	Buy
2017-11-14	28.76	36.05	Buy
2018-01-26	34.0	38.34	Buy
2018-03-28	36.88	45.37	Buy
2018-04-27	35.9	43.79	Buy
2018-06-14	40.48	47.63	Buy

Source: UBS; as of 05 Jul 2018

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