The Open Education Resources ecosystem
An evaluation of the OER movement's current state and its progress toward mainstream adoption

June 2013

Context of the work

Since the William and Flora Hewlett Foundation began investing in open education resources in 2002, the field has grown significantly: the past decade has seen an influx of OER and increased awareness and adoption

However, more work remains to push the OER movement from the sidelines of mainstream education into the center of the classroom

The Foundation engaged the Boston Consulting Group in late 2012 to evaluate the state of the current ecosystem in the United States and to help understand how to measure the movement's progress towards a sustainable, mainstream end-state

This document contains a summary of BCG's findings, which were based on primary and secondary research, including dozens of interviews of experts and participants in the OER movement and a survey of ~375 K – 12 teachers and educators
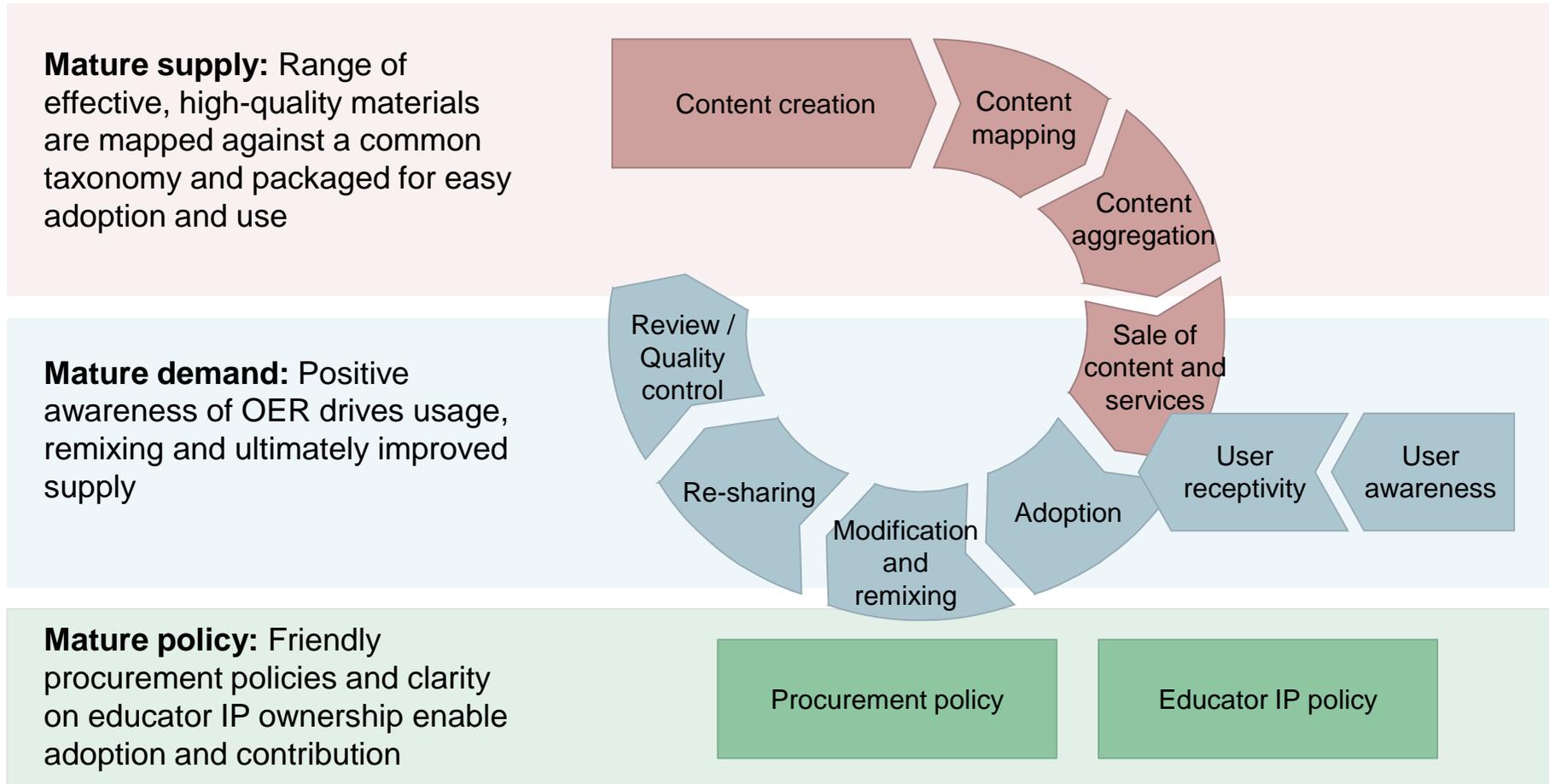
	OER enriches existing resources	**OER used as primary material**	**OER helps "flip" classroom**
Role of OER	**OER reinforces existing content, but remains supplementary** • E.g., teachers use standard textbook but assign Khan videos as homework	**OER primary instructional material in the classroom** • Teachers start by using off-the-shelf OER products, then remix and share their own content	**OER allows for individualized in-classroom learning** • Personalized content delivered via learning platforms • OER significant portion of overall content
Role of teacher	**Teacher engages in some remixing and sharing of content** **Teaching methods remain largely the same**	**Teacher remixes and shares content** **Teaching methods remain largely the same**	**Teacher remixes and shares content** **Teacher serves as coach rather than lecturer**
Level of disruption	**Low**	**Medium**	**High**

Important to note that "wins" towards other visions of success should still be seen as progress

High quality supply, strong educator demand and supportive policies will drive a healthy, mature ecosystem

Mature supply: Range of effective, high-quality materials are mapped against a common taxonomy and packaged for easy adoption and use

Mature demand: Positive awareness of OER drives usage, remixing and ultimately improved supply

Mature policy: Friendly procurement policies and clarity on educator IP ownership enable adoption and contribution

Content creation

Content mapping

Content aggregation

Sale of content and services

Review / Quality control

Re-sharing

Modification and remixing

Adoption

User receptivity

User awareness

Procurement policy

Educator IP policy

BCG evaluated supply, demand and policy to understand ecosystem's current state and barriers toward progress

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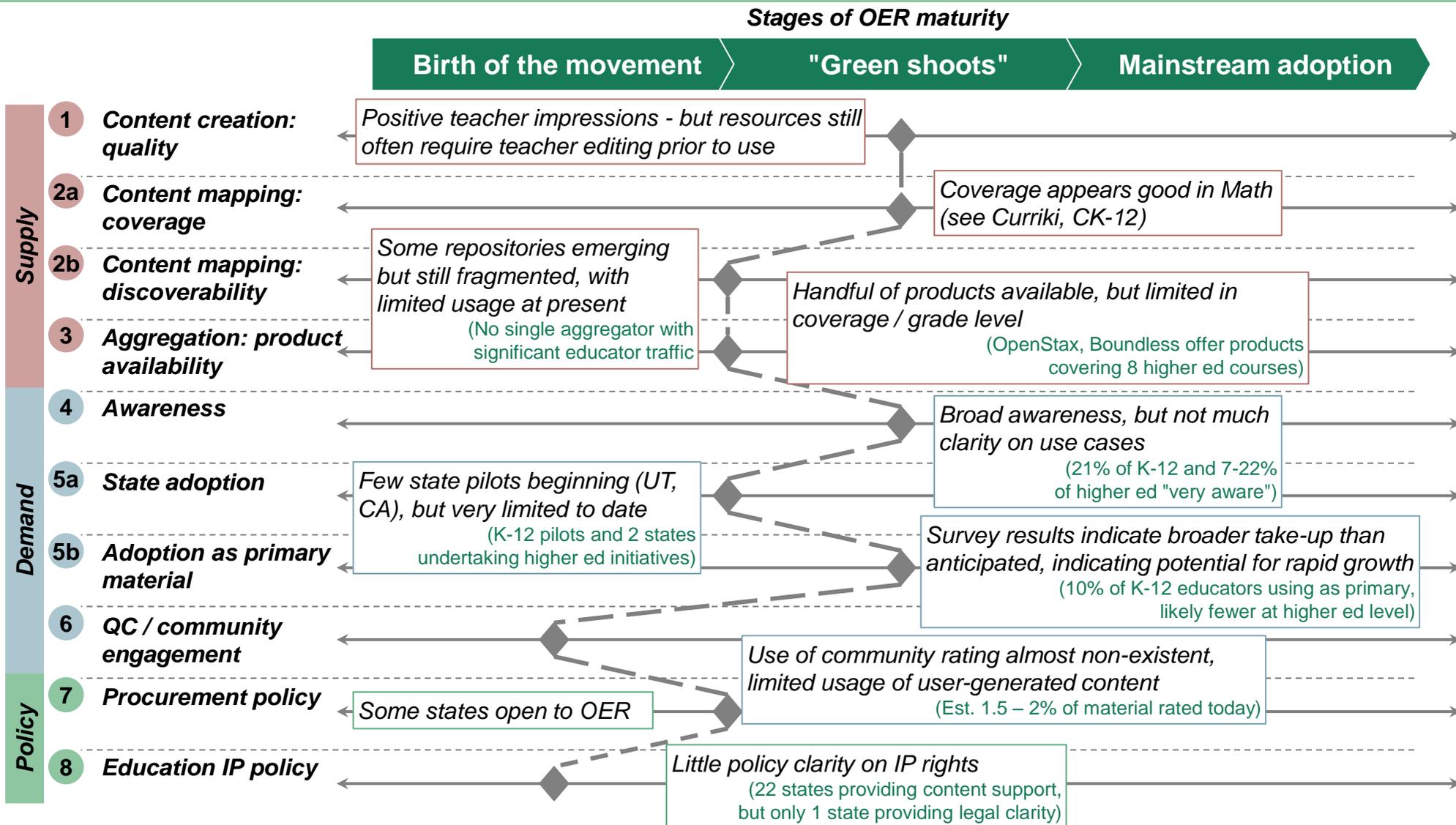# Given ultimate goal, in-classroom adoption is the key metric

Tracking adoption enablers will provide additional insight

Ecosystem leverage point

Supply

1 Content creation

Track teacher perceptions of quality of OER material vs. proprietary options

2 Content mapping

Evaluate OER's organization and coverage across core subjects

3 Content aggregation

Track existence of aggregated "products" that can be used off-the-shelf

Sale of content and services

Demand

Student outcomes

4 *User awareness*

Measure educator awareness of OER

User receptivity

5 **Adoption**

Measure adoption, both by teachers and by states

Modification / remixing

Re-sharing

6 QC / review

Assess level of teacher engagement

Policy

7 Procurement policy

Track states' friendliness to OER procurement

8 Education IP policy

Track which states provide clarity on teacher IP ownership

As progress is made on removing barriers at key leverage points, reasonable to expect that adoption will increase

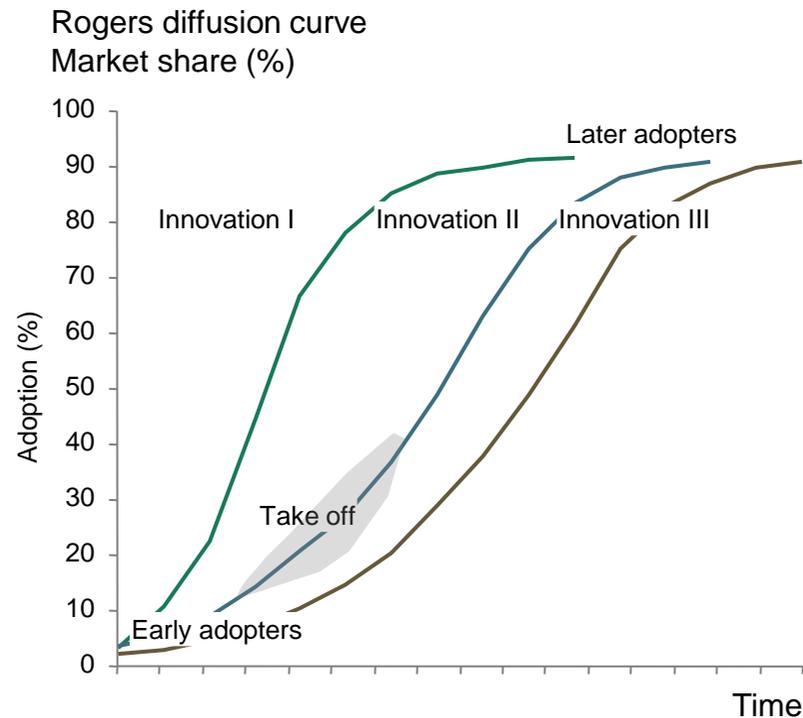# Research indicates OER is showing positive green shoots, but still has ways to go before reaching mainstream

Stages of OER maturity

Birth of the movement	"Green shoots"	Mainstream adoption

Supply

1. **Content creation: quality** — *Positive teacher impressions - but resources still often require teacher editing prior to use*

2a. **Content mapping: coverage** — *Coverage appears good in Math (see Curriki, CK-12)*

2b. **Content mapping: discoverability** — *Some repositories emerging but still fragmented, with limited usage at present* (No single aggregator with significant educator traffic)

3. **Aggregation: product availability** — *Handful of products available, but limited in coverage / grade level* (OpenStax, Boundless offer products covering 8 higher ed courses)

Demand

4. **Awareness** — *Broad awareness, but not much clarity on use cases* (21% of K-12 and 7-22% of higher ed "very aware")

5a. **State adoption** — *Few state pilots beginning (UT, CA), but very limited to date* (K-12 pilots and 2 states undertaking higher ed initiatives)

5b. **Adoption as primary material** — *Survey results indicate broader take-up than anticipated, indicating potential for rapid growth* (10% of K-12 educators using as primary, likely fewer at higher ed level)

6. **QC / community engagement** — *Use of community rating almost non-existent, limited usage of user-generated content* (Est. 1.5 – 2% of material rated today)

Policy

7. **Procurement policy** — *Some states open to OER*

8. **Education IP policy** — *Little policy clarity on IP rights* (22 states providing content support, but only 1 state providing legal clarity)

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Analogues provide guidance on how to identify "tipping point" towards mainstream adoption

Adoption accelerates after 15-20% market share[1]

Rogers diffusion curve
Market share (%)

Later adopters

Innovation I — Innovation II — Innovation III

Take off

Early adopters

Adoption (%)

Time

1. Everett Rogers, *Diffusion of Innovations*, Figure 1-2 (Ch. 1)s

More resources exist for higher ed, K-12 math and science

Interviewees indicate that fewer resources are available for K-12 ELA and social studies

Coverage of K-12 science / math appears stronger than other subjects

Educators report having difficulty locating non-STEM material

- **Educator:** *"Sciences seem okay and core mathematics is supported, but specific English requirements are not there."*
- **Educator:** *"We haven't found the 'Holy Grail' of hundreds of open ELA lessons."*

Subjects may be less ripe for complete OER coverage

- Greater need in higher-level English for primary, copyrighted material (e.g., novels)
- History often taught with a narrative point-of-view, single author text

Some organizations, such as Gooru, are attempting to map the ecosystem to better understand distribution of content

- Will eventually be able to compare distribution in a more quantitative way

Higher education coverage looks robust, but no definitive way to tell

Established higher education providers predate many K-12 providers, generating a wealth of content

Universities providing significant open content to the ecosystem

- **OER advocate:** *"Universities see [OCW] as part of their formula for success."*
- Content from universities viewed as "quality" given brand recognition

Businesses emerging to take advantage of existing content (e.g., Boundless Learning)

But unlike primary education, no universal taxonomy exists to measure coverage against

Also unclear who, if anyone, is tracking and mapping coverage today
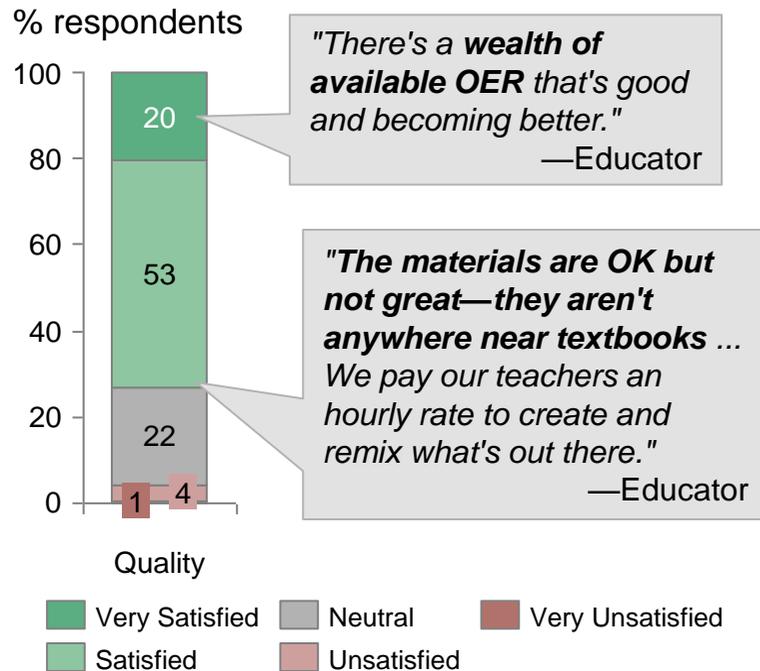
Source: BCG interviews

Educators' perception of quality cautiously positive

Positive sign for the movement, given importance of quality and efficacy in driving adoption

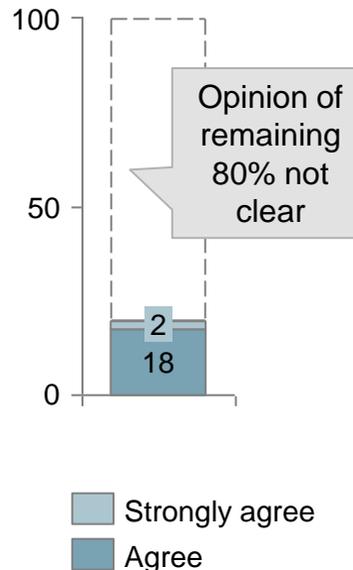### Babson and BCG survey showed satisfaction, but interviews indicated a broader range at K – 12

K – 12

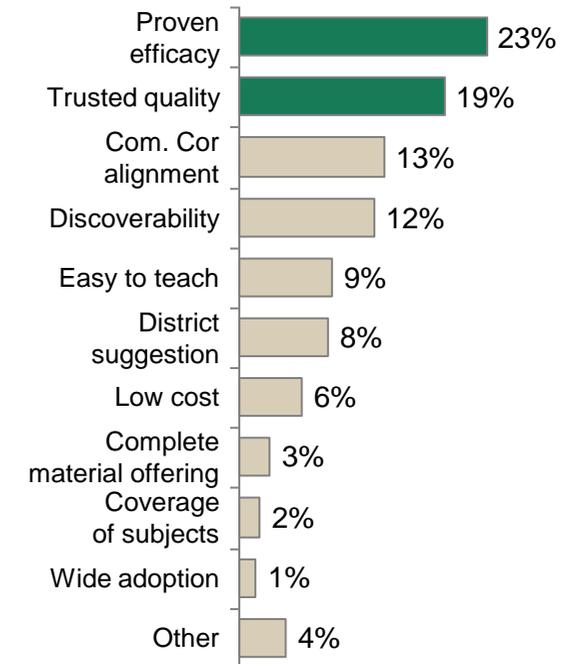**How satisfied are you with OER along the following dimensions? (K – 12 users, n = 165)**

% respondents

*"There's a **wealth of available OER** that's good and becoming better."*
—Educator

Stacked bar (Quality):
- 20 (Very Satisfied)
- 53 (Satisfied)
- 22 (Neutral)
- 1 (Very Unsatisfied)
- 4 (Unsatisfied)

*"**The materials are OK but not great—they aren't anywhere near textbooks** ... We pay our teachers an hourly rate to create and remix what's out there."*
—Educator

Quality

Legend:
- Very Satisfied
- Satisfied
- Neutral
- Unsatisfied
- Very Unsatisfied

Higher Ed

"OER are not yet of sufficient quality for my institution" (CAO, n = 2,512)[1]

% respondents

Opinion of remaining 80% not clear

Stacked bar:
- 2 (Strongly agree)
- 18 (Agree)

- Strongly agree
- Agree

Quality and efficacy key drivers of adoption

What, if true, would make you willing to adopt OER? (K – 12 non-users, n = 212)

Category	%
Proven efficacy	23%
Trusted quality	19%
Com. Cor alignment	13%
Discoverability	12%
Easy to teach	9%
District suggestion	8%
Low cost	6%
Complete material offering	3%
Coverage of subjects	2%
Wide adoption	1%
Other	4%

However, users find it challenging to discover and use existing content

Key challenges

Supporting quotes

1

Quality material is hard to find
- No clear OER "destination"
- Not organized against a common taxonomy
- Lack of curation or rating makes quality hard to find

*"Now **I have to fish through content** ... it's hard to find anything useful in a timely way."*
—Teacher

*"In general, **there need to be a smaller number of larger OER organizations** in order to make the space less fragmented."*
—Content creator

"There needs to be one place to find all the material, sorted by subject and standards."
—Educator

2

Not packaged in a way that's easy to use
- Generally not useable "off-the-shelf"
- Difficult to string together individual resources into a meaningful whole

*"You hunt and hunt for a single lesson, and sometimes you find a user that you can go through, but **there aren't a lot of places that aggregate similar kind of materials** – things that fit together well."*
—Educator

*" OER is a bit of a data dump. **There's no commitment to contextualize the content or make it easily usable."***
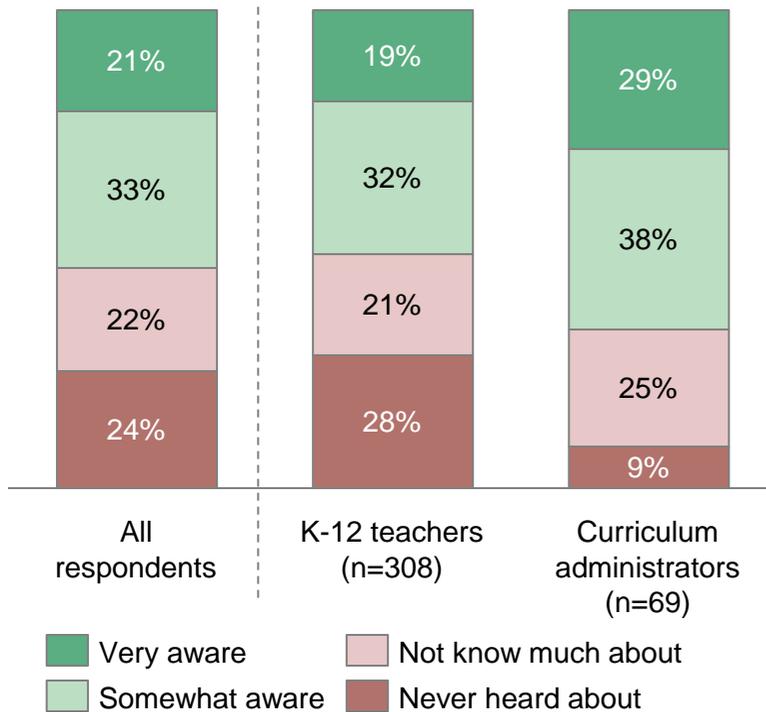—Content creator

Current aggregators not making discovery particularly user-friendly

While general awareness of OER is >50%, K – 12 educators not sure how to fully use in the classroom

~50% of K-12 educators report being aware of OER

Are you aware of Open Educational Resources? (K-12 educators, n = 377)

All respondents	K-12 teachers (n=308)	Curriculum administrators (n=69)
21%	19%	29%
33%	32%	38%
22%	21%	25%
24%	28%	9%

- 🟩 Very aware
- 🟩 Somewhat aware
- 🟥 Not know much about
- 🟥 Never heard about

However, survey indicates that OER is likely not used to its full potential

50%+ of users reported themselves as only "somewhat aware" of OER

- **Survey respondent:** *"More information about how OER could be integrated into the class is needed. **I am not totally aware of all that is available** and would perhaps use OER more if I was more informed"*

74% of non-users report either lack of awareness or knowledge on how to use OER as primary adoption barriers

- ~37% of aware non-users mention lack of clarity on how to use OER as their main adoption barrier

In higher education, while awareness among academic officers high, many professors remain unaware of OER

Academic officers seem highly aware of OER

Babson OER awareness survey for universities and colleges, 2011 (n = 2,500+ higher ed academic leaders)
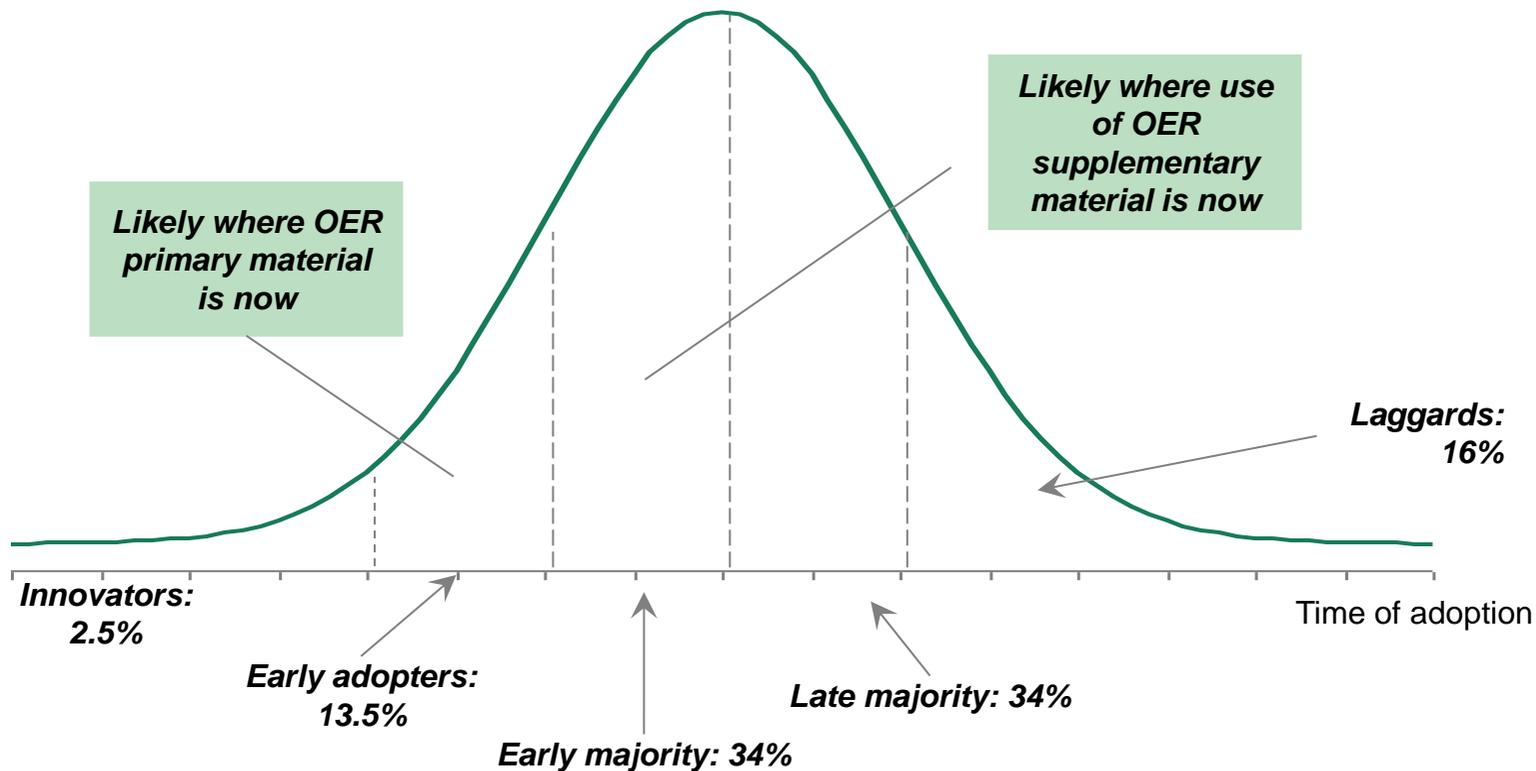
14% — Very aware
38% — Aware
36% — Somewhat aware
13% — Not aware

US higher ed leaders
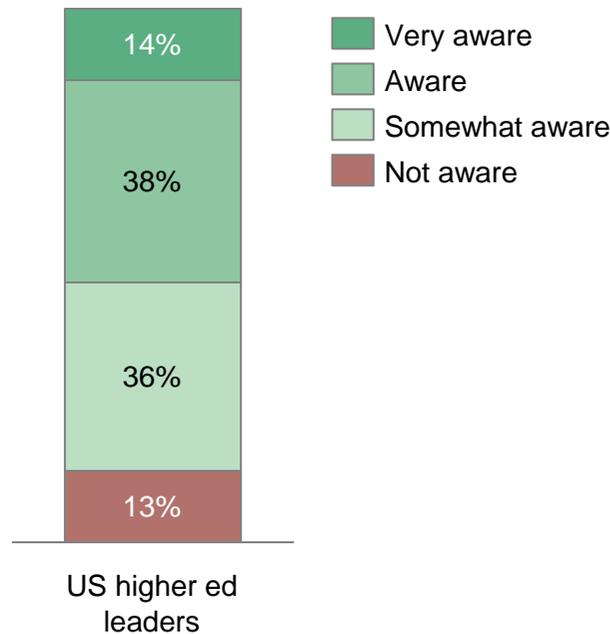
Professors interviewed also expressed limited knowledge of OER

Most interviewees were not aware of OER
- Aware respondents unable to recognize major OER providers
- **Professor and Chair of Department:** *"I am using some online open resources but I didn't know that I could find open textbooks"*

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Educator survey indicates that supplemental usage moving into mainstream - but primary material lagging

BCG survey indicated up to 40% of educators using OER as supplemental, v. ~10% using primary[1]

Likely where OER primary material is now

Likely where use of OER supplementary material is now

Laggards: 16%

Innovators: 2.5%

Early adopters: 13.5%

Early majority: 34%

Late majority: 34%

Time of adoption

Existing procurement processes favor traditional materials

Policy changes could spur adoption at K – 12 level

Some states have policies in place that favor physical textbooks
- e.g., Williams Act in California requires each student to have materials at school and to take home
- e.g., Florida content distribution system requires physical materials (books, CD-ROMs, etc.)

Long RFP processes make it difficult for OER to even be considered
- Can require bidder to post a bond
- Applications often lengthy and time-consuming

Districts fear losing funding if they go with lower-cost option (e.g., OER)

Even if policy is changed, may need to overcome inertia and cultural preference for traditional material

*"When a state goes to say, "We need a new textbook," there's no one [from the OER space] who's able to bid on that RFP. **The acquisition model isn't built to accept free.**"*
—Policy influencer

"If OER were asked to go before a committee from reviewers to discuss the content, who would defend it?"
—Policy influencer

*"Many purchasers **fear that if they move to OER, then they could lose the funding they previously had** allotted for textbooks."*
—Content creator

*"K-12 is much more **corrupt—backroom deals make it really difficult.**"*
—Content creator

"Even at community colleges, the current distribution model favors current publishers—not necessarily in the same way as with districts, but professors do not often exercise their right to choose materials."
—Policy influencer

Lack of clarity around teacher IP complicates ability to create, remix, and share

Experts unclear on who actually owns K-12 teachers' IP

> "It's **unclear on who owns IP**, but the answer I often get is that teachers are public employees (not of the state but of the local school district)—so the **district owns the IP unless it's been specifically negotiated.**"
>
> —Policy influencer

> "I found that **teachers were reluctant to sign waivers to provide material as OER, since they didn't think they were actually permitted to share** through Creative Commons."
>
> —Educator and policy influencer

While states are legislating, still unclear if they have the authority

Utah passed policy in 2009 around teacher ability to cede to the commons
- Utah State Education Board allowed teachers to license educational materials under a Creative Commons license
- However, according to some, Utah's law merely aspirational, does not have a binding effect

Virginia passed HB 1941 in 2009 directing the development of a state IP policy, but unclear if further policy followed

Tracking policies would involve either going district-by-district or working through teacher unions

Further considerations as the ecosystem evolves

Tracking a core set of metrics consistently will provide a deeper understanding of the OER ecosystem over time:

- Key enablers could identify where movement is progressing quickly and where it is lagging
- Potential for lagging metrics to also signal previously unidentified risks to the ecosystem

As OER continues to grow, it will remain important to validate quantitative metrics with a broader understanding of OER's progress and its role in improving learning outcomes and accessibility to educational materials

- Key metrics and their targets could evolve, particularly along dimensions that are presently tracked through largely qualitative metrics
- While perceived quality should be measured over time, direct research on OER's efficacy would validate this metric while also encouraging adoption

For more information, please contact BCG's Education practice:

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Disclaimer

The materials contained in this presentation are designed for the senior management of the Education Program of the William and Flora Hewlett Foundation ("the Client") to identify a specific set of high level metrics to help the Client make the judgment that OER is moving into the mainstream. These materials serve only as the focus for discussion and are incomplete without the accompanying oral commentary and may not be relied on as a stand-alone document. BCG has used public and/or confidential data and assumptions provided to BCG by the Client which BCG has not independently verified. Changes in the underlying data or operating assumptions will clearly impact the analyses and conclusions. Further, BCG has made no undertaking to update these materials after the date hereof notwithstanding that such information may become outdated or inaccurate. No person or entity which is not the Client ("Third Party") may, and it is unreasonable for any Third-Party to, rely on these materials for any purpose whatsoever. To the fullest extent permitted by law (and except to the extent otherwise agreed in a signed writing by BCG), BCG shall have no liability whatsoever to any Third-Party, and any Third-Party hereby waives any rights and claims it may, have at any time against BCG with regard to the services, this presentation or other materials, including the accuracy or completeness thereof. Receipt and review of this document shall be deemed agreement with and consideration for the foregoing.

Appendix

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Methodology: Completed nearly 40 interviews and surveyed over 375 teachers and educators

Qualitative interviews

38 interviews completed over course of engagement

Interviews evenly split between experts in supply, demand, and policy, including:
- Funders
- Content creators, both for- and non-profit
- Teachers and community college professors
- School administrators
- Policy experts and advocates

Quantitative survey

Survey instrument launched online from November 13 – 20, 2012
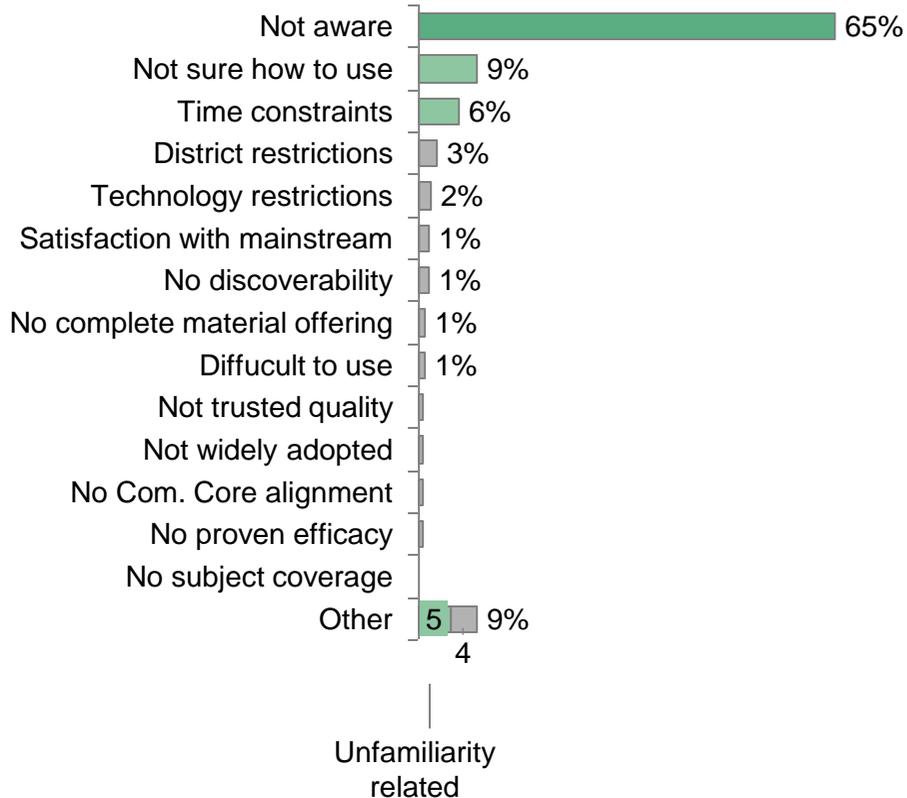- Conducted by Harris Interactive and targeted to designated educators panel

Captured 377 qualified responses:
- 308 K-12 teachers
- 69 curriculum decision makers / administrators

Time constraints and lack of awareness impede adoption, while efficacy and quality could be major accelerators
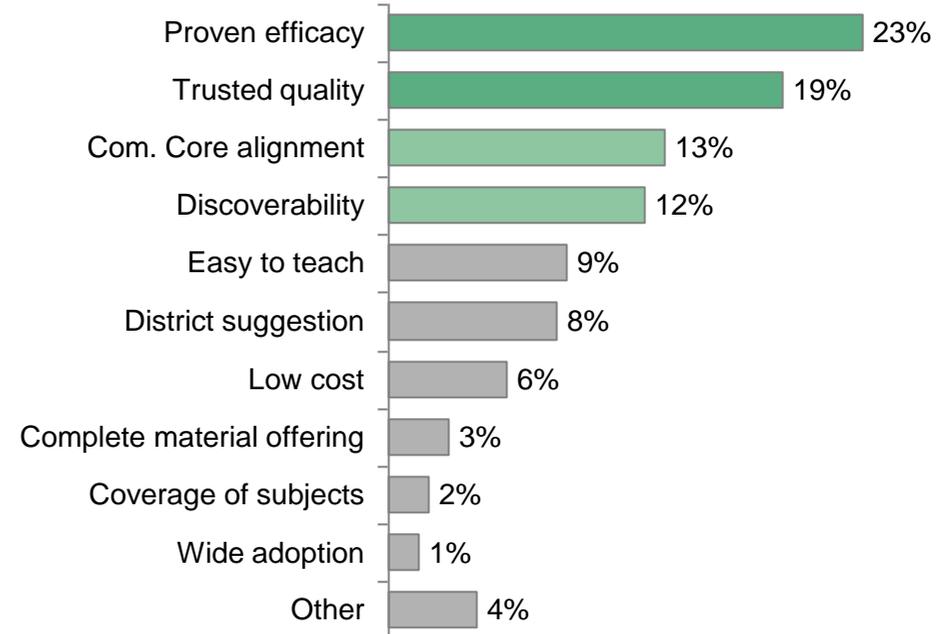
Lack of awareness and clarity on use cases main barriers to adoption

What are the main drivers for not using OER? (non-users, n = 212)

Not aware	65%
Not sure how to use	9%
Time constraints	6%
District restrictions	3%
Technology restrictions	2%
Satisfaction with mainstream	1%
No discoverability	1%
No complete material offering	1%
Diffucult to use	1%
Not trusted quality	
Not widely adopted	
No Com. Core alignment	
No proven efficacy	
No subject coverage	
Other	5 9%

4

Unfamiliarity related

Proof of efficacy and quality biggest drivers to accelerating adoption

What, if true, would make you willing to adopt OER? (non-users, n = 212)

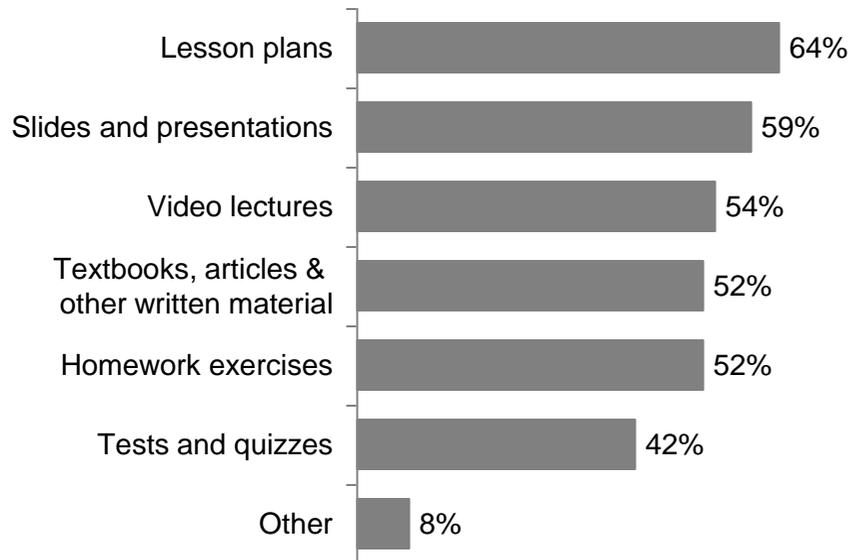|	
Proven efficacy	23%
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District suggestion	8%
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Complete material offering	3%
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Other	4%

Current users adopting broad range of OER resources due to their flexibility and attractive cost profile

Broad range of resources used
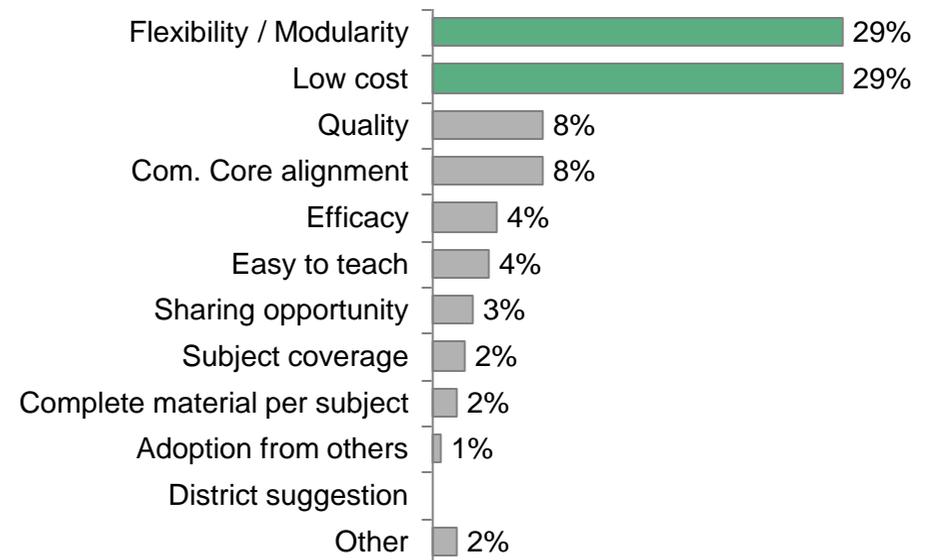
What OER content types / features do you use or have used?
(K-12 educators using OER, n = 165)

Resource	%
Lesson plans	64%
Slides and presentations	59%
Video lectures	54%
Textbooks, articles & other written material	52%
Homework exercises	52%
Tests and quizzes	42%
Other	8%

Educators are adopting mainly for flexibility to adapt the content and low cost

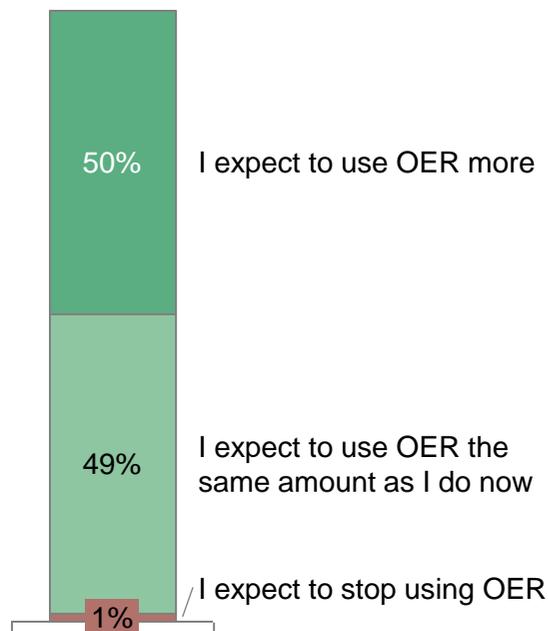**Which is the most important reason why you use Open Educational Resources?**
(K-12 educators using OER, n = 165)

Reason	%
Flexibility / Modularity	29%
Low cost	29%
Quality	8%
Com. Core alignment	8%
Efficacy	4%
Easy to teach	4%
Sharing opportunity	3%
Subject coverage	2%
Complete material per subject	2%
Adoption from others	1%
District suggestion	
Other	2%

Educators are satisfied with OER usage and expect to continue using in the future
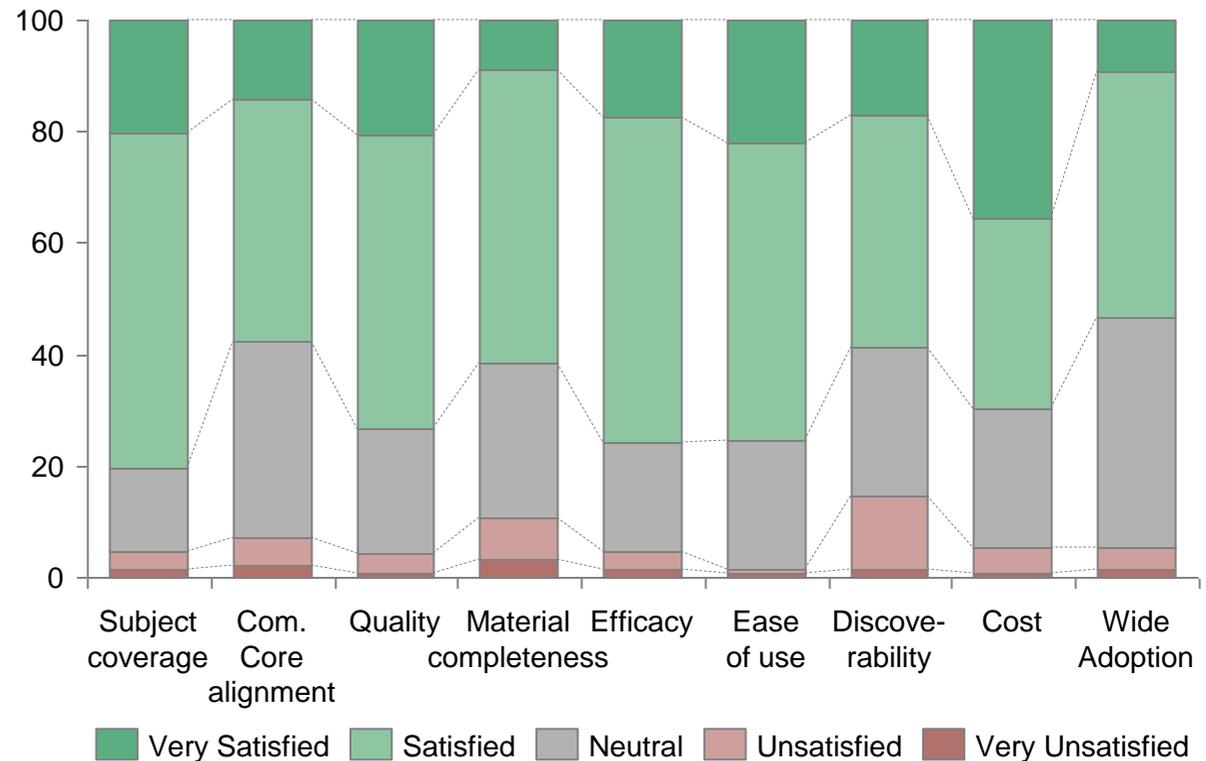
Overall, educators are satisfied with OER usage

Which of the following statements best describes how you expect to use OER over the next 3 years?
(users, n = 165)

- 50% — I expect to use OER more
- 49% — I expect to use OER the same amount as I do now
- 1% — I expect to stop using OER

Satisfaction levels high across multiple dimensions

How satisfied are you with Open Educational Resources along the following dimensions? (users, n = 165)

Dimensions (x-axis): Subject coverage, Com. Core alignment, Quality, Material completeness, Efficacy, Ease of use, Discove-rability, Cost, Wide Adoption

Legend: ■ Very Satisfied ■ Satisfied ■ Neutral ■ Unsatisfied ■ Very Unsatisfied

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Educators frequently cite need for "productized" content

Several players, particularly in the higher ed space, providing open textbooks to meet need

"I would not teach without a complete textbook at a survey level."
—Community college professor

"I've not yet found anything close to a textbook in open source … but if I could find it, I would use it ... but it would be tough to stitch together chapters on my own."
—Community college professor

"The packaging is important— this is why teachers rely on textbooks."
—Policy maker

"The existing content isn't packaged in a way that makes it easily usable off-the-shelf."
—Educator

K – 12

cK-12

- Goal to provide better materials at low or no cost to students
- Experienced teachers author text, which is vetted by domain experts

Higher education

openstax

- Saw a need to provide material that would be easily adoptable
- Creating a partner ecosystem to add services and facilitate distribution

BOUNDLESS

- Chose to enter higher education due to lower barriers to entry, availability of content
- Direct-to-consumer model targeting students as purchasers / end-users

flatworld KNOWLEDGE

[Moving away from open]
- Emphasizes authorship and curation
- Believes it's impossible to provide this type of content sustainably while remaining free

To date, more activity in higher ed due to lower procurement barriers and existence of usable content