



# Facilitating student engagement through educational technology

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<http://classroomlearningtools.weebly.com>



## Introduction



- An increasing number of ‘wicked challenges’
  - young people need a range of interdisciplinary and collaborative skills<sup>1</sup>
- International recognition for the growing importance of ICT skills and digital literacy<sup>2</sup>
  - Link between higher levels of ICT skills and higher wages<sup>3</sup>
- Shouldn’t be a problem for these ‘digital natives’<sup>4</sup>, right?
- A range of international empirical evidence says this is not the case<sup>5</sup>

1. Oliver & Jorre de St Jorre (2018)  
2. OECD (2015a, 2015b); Redecker (2017)  
3. Falck, Wiederhold, & Heilmisch, 2016  
4. e.g. Prensky (2001)  
5. Akçayır, Dündar, & Akçayır (2016); Barak (2018); Henderson, Selwyn, & Aston (2017); Lai & Hong (2015)

- Student use of technology is a cause for concern
  - a high level of smartphone and digital media use amongst young people in Europe, but comparatively little use of digital technologies within the classroom<sup>1</sup>
  - 1 in 5 mainstream higher education learners in the UK have never worked online collaboratively with others and a very low percentage have used educational games or simulations for learning, or been exposed to live polling<sup>2</sup>
  - whilst young people (aged 14-29) in Germany are by far the biggest consumers and users of the internet and digital tools, they place less importance on the teaching of digital media skills in schools than other age groups<sup>3</sup>
  - the level of interest and enjoyment in ICT decreasing between Year 6 and Year 10 in Australia - female students showed significantly lower levels of interest and enjoyment than males<sup>4</sup>

1. OECD (2015b)  
 2. Newman & Beetham (2017, p.14)  
 3. Initiative D21 (2015, p.29)  
 4. Thomson (2015)

- The use of digital media in lessons does not automatically guarantee active student engagement or deep learning.<sup>1</sup>
- 2017 JISC report - “technology [is] more commonly used for convenience [by educators] rather [than supporting] more effective pedagogy”.<sup>2</sup>
- Appropriate tools and pedagogies must be used if technology is to help, rather than hinder learning.<sup>3</sup>



1. Kirkwood (2009); Tamim, et al. (2011)  
 2. Newman & Beetham (2017, p.5)  
 3. Higgins, S., Xiao, Z., & Katsipatakis, M. (2012); Popenici (2013)




## Digital Education in Germany

- Federal digital agenda 2014-2017<sup>1</sup>
  - Digital literacy across all education levels in society
- Hochschulforum Digitalisierung<sup>2</sup> think tank
  - Until 2020
  - Includes peer to peer coaching for HE institutions
- Research funding<sup>3</sup>
  - 20 projects are being funded from the first call
  - Now funding available for K-12 research

1. Die Bundesregierung (2014)  
 2. Hochschulforum Digitalisierung (2016)  
 3. Bundesministerium für Bildung und Forschung, Referat Digitaler Wandel in der Bildung, n.d.

## Facilitating student engagement through educational technology

- Students + technology does not = engagement
  - Careful planning and sound pedagogy are needed<sup>1</sup>
- Research has found that using technology can predict increased student engagement<sup>2</sup>
  - Improved self-regulation and self-efficacy<sup>3</sup>
  - Increased participation and involvement<sup>4</sup>
  - Increased involvement in the wider university community<sup>5</sup>
- By identifying factors that positively contribute to student engagement when using technology, educators are better able to design lessons and courses that will engage students and lead to enhanced outcomes.

1. Higgins, S., Xiao, Z., & Katsipatakis, M. (2012); Popenici (2013)  
 2. Rashid & Asghar (2016); Chen, Lambert & Guidry (2010)  
 3. Alioon & Delialioglu (2017); Bouta, Retalis & Paraskeva (2012)  
 4. Salaber (2014); Northey, et al. (2015); Alioon & Delialioglu (2017)  
 5. Junco (2012); Alioon & Delialioglu (2017)

### Factors leading to student engagement

- Ensuring a sufficiently high level of challenge in tasks<sup>1</sup>
- Teachers having sufficient ICT skills and confidence<sup>2</sup>
- Teachers being prepared and using well-designed tasks<sup>3</sup>
- Teachers providing ample suggestions and feedback<sup>4</sup>
- Using humour<sup>5</sup>
- Giving clear explanations of why the technology is being used<sup>6</sup>

1. Cakir (2013); Ma, Han, Yang & Cheng (2015); Howard, Ma & Yang (2016)
2. Howard, Ma & Yang (2016)
3. Ma, Han, Yang & Cheng (2015); Rashid & Asghar (2016)
4. Ma, et al. (2015)
5. Imlawi, Gregg & Karimi (2015)
6. Cakir (2013); Northey, et al. (2015)

- Disengagement
  - Can profoundly affect students' learning outcomes and cognitive development.<sup>1</sup>
  - Predictor of student dropout in both secondary and higher education.<sup>2</sup>
- How can technology be leveraged in the classroom, to enhance student engagement?
  - Prior research focused particularly on higher education<sup>3</sup>
  - Further research and synthesis of literature required<sup>4</sup>
  - More research needed in K-12 schools that successfully create digital environments which promote cognitive engagement, and blend formal and informal learning approaches<sup>5</sup>

1. Ma, Han, Yang & Chen (2015)
2. Finn & Zimmer (2012)
3. Henrie, Halverson & Graham (2015); Perez-Sanagustin, et al. (2017)
4. Chen, Lambert & Guidry (2010); Howard, Ma & Yang (2016)
5. Kong, et al. (2014)



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Mobility and intercultural learning

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Employment and languages

Early language learning

Content and language integrated learning

Languages of schooling

CEFR and ELP

## European Centre for Modern Languages of the Council of Europe

- Fantastic resources - <https://www.ecml.at/>
- Running workshops across Europe for language teachers, e.g. ICT, action research
- Twitter - [@ECMLCELV](#) and [@MartinaEmke](#)



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HOME > RESOURCES > INVENTORY OF ICT TOOLS

## Inventory of ICT tools and open educational resources

Welcome to the inventory of freely available online tools and open educational resources for language teaching and learning developed by the ICT-REV project! The inventory contains a list of tools that have been evaluated with specific criteria in mind. [Read more](#)

- A large list of ICT tools and resources that can be used for language teaching and learning.
- Searchable by:
  - Function
  - Type of interaction
  - Skills
  - Content
- Teachers can suggest tools to be added to the list.
- Click [here](#) for the link

Search

**Principal functions**

- ☐ Audio record/edit/share
- ☐ Blogging
- ☐ Bookmarking
- ☐ Citation manager
- ☐ Course management
- ☐ File sharing/syncing
- ☐ Flashcard
- ☐ Game app
- ☐ Graphic organizer
- ☐ Image sharing
- ☐ Marking software
- ☐ Mind mapping
- ☐ News aggregator
- ☐ Note taking
- ☐ Podcast aggregator
- ☐ Polling
- ☐ Question/answer management
- ☐ Quiz maker
- ☐ Screen recording
- ☐ Slide presenting
- ☐ Social networking

**Type of Interaction**


- ☐ Group/pair work - classmates
- ☐ Group/pair work - outsiders
- ☐ Individual work
- ☐ Presenting

**Skills**

- ☐ Listening
- ☐ Speaking
- ☐ Reading
- ☐ Writing
- ☐ Vocabulary
- ☐ Grammar
- ☐ Pronunciation
- ☐ Intercultural


**Content**

- ☐ You supply
- ☐ Website/other users supply



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## Projekthinhalte

- **Inhaltsanalyse**  
Exploration des Forschungsfeldes
- **Systematic Review**  
Identifikation der Gelingensbedingungen für student engagement durch digitale Medien in der Hochschullehre
- **Validierung**  
Fokus-Gruppen Interviews


### Inhaltsanalyse von Zeitschriften

- Identifikation möglicher (neuer) Forschungsfelder (Lee, Driscoll, & Nelson, 2004)
- Best Practices des Einsatzes von EdTech in Lehr-Lern-Settings und Identifikation relevanter Journals für eigenes Feld (Baydas et al., 2015)







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## PhD Research Questions

1. What are the central research topics and issues related to educational technologies in general and, more specifically, in the context of K-12 and Australia?
2. In what ways does educational technology support student engagement in the K-12 classroom?
3. How can the flipped classroom model support student engagement in the K-12 classroom?






## Methodology

- PhD by publication using a social constructivist paradigm<sup>1</sup>
  - Macro overview, narrowing to micro examples

1. Content Analysis – *Australasian Journal of Educational Technology*
2. Theoretical Article
  - *Facilitating student engagement through educational technology: Towards a conceptual framework*
3. Systematic Literature Review
  - *Facilitating student engagement through the flipped classroom approach in K-12: A Systematic Review*
  - *Facilitating student engagement through educational technology in K-12: A Systematic Review*
4. Case Study
  - *Facilitating student engagement through the flipped classroom approach in K-12: A case study of two South Australian Professional Learning Networks*

1. Terre Blanche, Kelly, & Durrheim (2006)

## Case Study – Flipped Learning in K-12

“A promising method to effectively engage students in the learning process and to develop their digital competencies”<sup>1</sup>

### What is flipped learning?

- Student-centred approach, theoretical foundations in constructivism and collaborative learning theory.<sup>2</sup>
- Students complete computer-based, individual instruction at home and the group space is used for interactive group learning activities in the classroom.<sup>2</sup>
- Does not always use videos.<sup>3</sup>

Flipped learning has been shown to improve:

- Higher order thinking, collaboration and teamwork skills<sup>4</sup>
- Subject-specific knowledge and skills<sup>4</sup>
- Transparency for parents<sup>5</sup>

1. Kostaris, et al. (2017, p.261)  
 2. Bishop & Verleger (2013)  
 3. Bergmann & Sams (2012); Gough, DeJong, Grundmeyer & Baron (2017)  
 4. Aidinopolou & Sampson (2017); Lo & Hew (2017); Kim, Park, Jang & Nam (2017)  
 5. Gough, DeJong, Grundmeyer & Baron (2017)

## Case Study – Flipped Learning in K-12

### Objectives:

1. to uncover under which conditions educational technology supports student engagement in the K-12 classroom applying the flipped classroom approach;
2. to explore student, teacher and parent perceptions of and attitudes towards the flipped classroom model in the K-12 classroom;
3. to explore whether student access to technology at home impacts on the flipped classroom approach; and
4. to explore how and to what extent K-12 teachers are accessing professional development and contemporary research on using educational technology in the classroom.

## Case Study – Flipped Learning in K-12

### Methodology:

- Qualitative case study across one year
  - Allows an examination of phenomena from different angles “in its natural setting”<sup>1</sup>
  - Triangulate research findings<sup>2</sup>
  - Multiple opportunities for data collection to gain insight into flipped learning approach over time<sup>3</sup>
  - effective for conducting research within classrooms, as each one is complex and contextually different<sup>4</sup>

### Cohort:



- Students, teachers, school leaders and parents from schools in two Professional Network Learning Groups in South Australia

1. Willis (2008, p.212)

2. Yin (2014)

3. Henrie, Halverson & Graham (2015); Ma, Han, Yang & Cheng (2015)

4. Tojo & Takagi (2017)

## Case Study – Flipped Learning in K-12



**Stage 1 Data Collection (December 2017):**

- A Likert scale and open-ended question questionnaire was administered to teachers ( $n = 9$ ) and principals ( $n = 1$ ), including questions used in previously validated instruments, such as the:
  - Information and Communication Technology Scale<sup>1</sup>
  - Online Learning Readiness Scale<sup>2</sup>
  - the perception questionnaire used by Gough, et al. (2017)
- Semi-structured interviews with teachers ( $n = 9$ ) and principals ( $n = 2$ )

**Stage 2 Data Collection (2018)**

- A Likert scale and open-ended question questionnaire for teachers
- A Likert scale and open-ended question questionnaire for students:
  - eLearning readiness<sup>3</sup>
  - Flipped learning readiness and satisfaction<sup>4</sup>
  - engagement<sup>5</sup>

1. Huang & Hong (2016)  
 2. Hung, Chou, Chen & Own (2010)  
 3. e.g. Yurdugül & Demir, in press; Huang & Hong, 2016  
 4. e.g. Hao, 2016a; Hao, 2016b; Kostaris, et al., 2017  
 5. e.g. Appleton, Christenson, Kim, & Reschly, 2006; Australasian Survey of Student Engagement

## Case Study – Flipped Learning in K-12

**Stage 3 Data Collection (May 2018 – collection ongoing at present):**

- Follow up semi-structured interviews with teachers ( $n = 7$ )
- A Likert scale and open-ended question questionnaire for parents ( $n = 13$ )
- Semi-structured interviews with parents
- Focus groups ( $n = 7$ ) with Year 7 and 12 students ( $n = 20$ )
- Classroom observations
  - Year 7 Maths and Creative Arts
  - Year 9 Maths and Music
  - Year 11 Music
  - Year 12 Chemistry, Physics and PE
- Network Learning Group meeting observations ( $n = 2$ )

**Stage 4 Data Collection (November or December 2018)**

- Questionnaire for students, parents and teachers involved
- Final semi-structured interviews with teachers

And now the good stuff...

Results so far!

### Student Engagement Indicators – observations ( $n = 6$ )

Affective Engagement	Behavioural Engagement	Cognitive Engagement	Agentic Engagement
Positive interactions with peers and teachers	Time on task/staying on task/persistence	Positive perceptions of teacher support	Students personalising lessons
Enjoyment	Attention/Focus	Self-regulation	
Excitement	Concentration	Learning from peers	
Enthusiasm	Participation/interaction <ul style="list-style-type: none"> <li>Asking questions</li> <li>Contributing to discussions</li> </ul>	Use of sophisticated learning strategies (e.g. summarising, paraphrasing, elaboration)	
Interest	Attempting	Staying on task/focus	
Curiosity	Action/initiation		
Motivation	Study habits		
	Positive conduct		
	Confidence		

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## Teacher perceptions - Disadvantages



- “Use of technology is a double-edged sword. It’s riddled with social justice inequity and access at home for many students, whether it’s time, space, the ability to afford it, the connection. The ability to find somewhere to work and learn, is often tricky.” (Teacher 12)
- “I think we have to take a coherent approach as a school, because if some teachers are doing it and other teachers are not, or I’m still trying to figure out whether if all teachers are doing it, whether it’s too much flipped?” (Teacher 14)
- “Yeah, I guess there were some occasions where the students just didn’t apply themselves in the best manner and they would not watch the video. The consequence of that is that the student would have to watch it in class, they’d catch up for it.” (Teacher 25)

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## Teacher perceptions - Advantages

- „This is the way kids learn“ (Teacher 2)
- „It’s kind of like a 24/7 accessible teacher, without actually being there.“ (Teacher 4)
- “They felt like the quality of feedback they got was better because with written feedback I guess there’s another level of interpretation. You’re reading it and you’re trying to work out what the teacher means, but when I was speaking through it, they had a better idea of what I meant and understood the feedback more clearly.” (Flipped feedback - Teacher 11)
- “So, if they’ve accessed the information they need to before the lesson, you can spend your time helping them get that done. I think that’s majorly useful, rather than setting up at least half the lesson teaching them how to do something, getting them to do it and then trying to help out in the last little bit individually. So more time in the classroom, I think.” (Teacher 1)

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## Parent Perceptions

$n = 13$

- 61.54% with children in Year 7
- 38.46% in Year 12

Useful Tools and Services for School Use		
Rank 1	Search engines	4.85
Rank 2	Email (e.g. Hotmail)	4.69
Rank 3	School email	4.15
Rank 4	Videos (e.g. on YouTube)	4.08
Rank 5	Music (e.g. iTunes)	3.69
Rank 16	Blogs	2.33
Rank 17	Microblogging (e.g. Twitter)	1.54

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## Parent Perceptions

- Important for their children to use online tools (4.67)
- Children not necessarily more motivated to learn as a result (3.58)

Perceptions of flipped learning		
Rank 1	Flipped learning helps through rewatching content	4.00
Rank 2	Helps when students are absent	3.92
Rank 3	Discussions with teachers centre more on learning	3.33
Rank 4	Students have a greater sense of responsibility	3.31
Rank 5	Assignments and academic performance have improved	3.31
Rank 6	Students more engaged	3.23

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## Parent Perceptions

- Unsure as to whether it helps their children learn better (3.00)
- Don't think their children prefer flipped over traditional (2.92)
- Most have not watched any of their child's flipped content (2.46)

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## Student Perceptions

$n = 21$

- 61.90% in Year 7
- 38.10% in Year 12

Useful Tools and Services for School Use		
Rank 1	School email	4.67
Rank 2	Search engines	4.43
Rank 3	Videos (e.g. on YouTube)	3.76
Rank 4	Email (e.g. Hotmail)	3.45
Rank 5	Presentation sharing	3.00
Rank 15	Blogs	1.14
Rank 17	Microblogging (e.g. Twitter)	1.00

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### Student Perceptions

- Confident doing online research (4.57) and using MS Office programs (4.52)
- High expectations for learning (4.38) and motivated to learn (4.24)


Perceptions of flipped learning		
Rank 1	Flipped learning helps through rewatching content	4.20
Rank 2	Helps when students are absent	3.75
Rank 3	Allows for more active learning	3.70
Rank 4	Gives them a greater sense of responsibility	3.70
Rank 5	More time for learning content	3.65
Rank 6	Increased interaction with teachers	3.40
Rank 7	Feel more engaged	3.35

### Student Perceptions

- Unsure as to whether it helps build better collaborative skills with other students (2.95)
- Parents are not more aware of learning (2.75)
- Most parents have not watched any of the flipped content (2.40)



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## Student Perceptions of the Flipped Learning approach


### *Focus Groups*

Disadvantages
Internet can be a serious issue
Waiting until the next lesson for clarification
Content in videos needs to be clear
Videos by other teachers can be confusing
If you're not good at self-directed learning
No paper copy of flipped drafting
Not linking the video to class content

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## Student Perceptions of the Flipped Learning approach

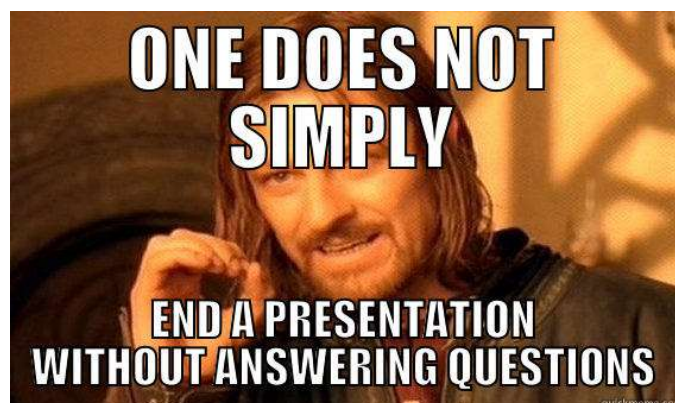
Advantages	
Increases one-on-one time with teacher	Videos fits their lifestyle/style of learning
Improved student-teacher relationships	"More valuable communication"
Subject content is more approachable	More motivated to work in class
Students feel more able to ask questions	Time at school is more productive
Being able to rewatch the videos	More focused on work
Homework time is reduced	Less likely to procrastinate
Can catch up if absent (traineeships etc)	Can see teacher thought processes
Reinforcement of content	Great for teacher self-reflection
More time for learning	Prepares students for university
Gives students more confidence	More accountable for learning
Not bothering the teacher as much	Easier to follow flipped drafting
More comfortable in approaching teacher	Subjects are more enjoyable

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## Final thoughts...

- Engage with research
  - More action research is needed in schools
  - Alternatively, form relationships with researchers
  - Get in touch with me! ([@misc\\_nerd](#))
- Reflect regularly and ask students
- Connect to MFL colleagues through Twitter ([#MFLtwitterati](#))
- Have a go!

## Questions?



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