Play-based learning

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Erasmus Plus Project: Play-based learning

What is play?

- 1. Play is intrinsically motivated; child wants to pursue a given activity, not forced or reinforced by others;
- 2. Play is its own "means" and "ends"; it is a behaviour that is not goal-oriented;
- 3. Play is non-rule-governed; play is distinguished from games with rules;
- 4. During play, children impose their own meanings on objects ("What can I do with these objects?");
- 5. Play involves nonliterality: Objects are transformed and decontextualized (e.g., a piece of cardboard becomes a "magic mirror"), and people assume nonliteral identities (e.g., a 4-year-old becomes a Prince).

Types of play

- free and adult-directed play- the degree of structure and the level of support and direction given by adults;
- indoors / outdoors;
- with or without using technology, especially smartphones and Ipads. Digital play is of particular interest especially considering the influence technology (eg, social media) has on young people's life and wellbeing.

Free and guided play

- Free play is typically described as play that is child-directed, voluntary, internally motivated, and pleasurable.
- Guided play refers to play activities with some level of adult involvement to embed or extend additional learning opportunities within the play itself: guided play activities (e.g., purposefully framed play). However, one distinction is about who has control over the play activity: teacher directed, such as intentionally planned games, while others are described as mutually directed, so that both teachers and students exercise some control over the play.

A clear distinction?

- The distinction between free play, mutually directed play, and teacher-directed play is useful for examining the growing body of literature on different types of play-based learning. However, it is not always easy to be made.

- Nor is it easy to decide which one is more appropriate at different developmental levels.

Research on play and child outcomes

- The field of play-based learning is relatively new and more research is needed to determine aspects of play (eg, levels of adult guidance) to promote children's a) developmental outcomes (eg, language, social and emotional development, social cognition) and b) academic learning.

Play and self regulation

- Through play, children:
- distinguish internal ideas from concrete reality: they change an object's usual meaning, thereby detaching mental symbols from the real objects and actions to which they refer.
- children are aided in relying on thought rather than impulse to guide their actions. Vygotsky noted that pretend scenarios support with following social rules. In fantasy play, young children willingly place constraints on their own actions when, for example, they follow the rules of caring for a sick doll.

Play and executive functioning

- Play supports executive functioning (it encompasses working memory, inhibitory control, and flexible shifting of attention to suit task demands, a mental plan): These basic cognitive operations, which improve rapidly between ages 2 and 6, underlie complex self regulatory abilities that enable children to cooperate with peers and adults and to persist with demanding tasks.

Play and social competence

- Pretence play bolsters children's social competence by allowing children to self-regulate, to cope with stress and to talk about emotions. This increased social competence is associated with more considerate behaviour, friendliness, conflict resolution, and peer acceptance.

Play and theory of mind

- Studies have reported on theory of mind enhancement through play and found a relationship between pretence abilities and theory of mind skills, although whether young children see pretence as involving mental action is not clear. Wyver and Spence who studied problem solving in play, noted that there was a reciprocal rather than a unidirectional relationship between cooperative play and problem solving.

Guided vs. unguided play

- Pre-schoolers who engage in more open-ended pretend play compared to play with teacher-determined goals exhibited more private speech, which is often used by children to regulate their behaviour. Rough-and-tumble play allows children to practice self-regulating their physical behaviours under moderately stressful conditions, yet in a safe and engaging context.

The importance of play

- Time for child active play has been shortened in many preschool classrooms because, with increasing emphasis on academic skill readiness, play's importance has been minimized. Play-based learning provides an excellent environment for fostering young children's cognitive development, especially for those thinking skills essential for cognitive depth. Because the research evidence is mixed on play's role in fostering such development, robust longitudinal studies are needed to investigate the extent and long term cognitive effects of early play-based learning (Bergen, 2018).

Is play instrumental?

- Is play a means to an end (ie, learning)? Play can still be tremendously beneficial for child development even when its goal is not learning per se or achieving a certain type of learning (learn phonics).

Unintended outcomes: should play be separate from learning activities?

- Early childhood programmes that elevate academic training at the expense of play have been found to dampen motivation to learn and diminish regulation of attention and behaviour, especially among low-SES children.

- Should early years practitioners engage young children in learning-based play?

Play for children who are different

- Little research exists regarding the use of play based activities to meet the needs of children with a diverse profile of needs, eg, disability, poverty / disadvantaged backgrounds.

Guided play and disability

- For children with disabilities, severe hearing impairment for example, adult-guided play may be welcome because they may find play with typically developing children a challenge due to a mismatch between cognitive, physical and social requirements and children's profiles; thus they welcome adult guidance. Also, in certain cultures play for children with disabilities may also be a challenge because of prejudice and stigmatisation in that children are invisible or a source of shame for the family.

Guided play and disadvantage

- Children growing up in poverty tend to spend more time with peers, engaging in unstructured play and less in structured activities. However, they may benefit from adult guided play to develop skills necessary for school readiness such as language and social skills.

Unguided play and disability / disadvantage

- Children with disabilities have reduced opportunities to engage in unstructured play without adult interference and support. How can we maximise their free play?

- How can we balance it with guided play?

Socio-economic status and play

- In addition, children from lower-socioeconomic (SES) backgrounds spend less time than children from higher SES backgrounds playing sports, participating in outdoor activities and leisure activities (mainly organised and supervised by adults). Low SES children spend more time using digital media. Accordingly, more work is needed to understand how to increase play affordances, such as safe, engaging playgrounds, for the children who are most in need of playtime.

Digital play

- The use of digital devices and the impact on peer interactions is huge and it links to mental health difficulties. For children with disabilities this is even more problematic due to reduced opportunities to unstructured play without adult interference.

- So one may argue that digit play could be the answer but at the same time consider the challenges it brings

Digital play

- Could digital play be used in constructive ways to support children with disabilities and those with disadvantage? When does digital play become toxic or counterproductive? Could digital play be guided in ways that enhances learning and social and communication skills?

- Or does it work against wellbeing? Is it cause or effect?

Game design and learning

- Transfer from computer games to external tasks,

- enhance cognitive processes, playing time and integration with curricular objectives,

- Examine the effects on participants, cost-effectiveness, guidance and animated agents,

- Evaluation of learning and recommendations for game design.

Transfer to life

- A critical question about using games for instruction is whether cognitive or psychomotor capabilities or attitudes acquired during game play generalize to non-game contexts, such as school, work, or everyday life, i.e., do they transfer? Of course, if there is no transfer, games would be of little use for instruction.

Transfer of skills

- Brown et al. (1997) found that young diabetic patients playing a computer game dealing with diabetes content gained more on various diabetes self-care behaviors than a comparison group playing a game without this content. Kato, Cole, Bradlyn, and Pollock (2008) found improved behaviors, knowledge, attributable to a game among young cancer patients.

Transfer of skills

- Greitemeyer and Oswald (2010) demonstrated that playing a pro-social computer game, compared to one that was neutral, increased helping behaviors. Similar transfer findings have been reported elsewhere (CannonBowers, Bowers, & Procci, 2011 ; Mayer, 2011 ; Sitzmann & Ely, 2009 ; Tobias et al., 2011) .

Cognitive processes

- Green and Bavelier (2003) conducted five experiments comparing the visual abilities of those who played action games to non-players. They found improvements in visual attention for the players. Anderson and Bavelier, 2011, found that fast action games improved processes dealing with perception, attention, and cognition. They expected that such improvements would enhance performance in tasks like reading fine print or driving. Karle, Watter, and Shedden (2010) found that computer game players had significantly shorter reaction times on complicated perceptual tasks. However, they observed no group differences in time or accuracy in the ability to switch from one task to another.

Classification skills

- Sung, Chang, and Lee (2008) evaluated a multimedia computer game involving sorting designed to improve children's classification skills. Tests examined the children's ability to grasp simple and complex taxonomic concepts. They found improved classification skills for the group playing the classification skills game compared to participants in a non-software activity or others playing a game not designed to improve classification schemes.

Are computer games useful?

- The findings suggest that computer games may lead to improvements in some cognitive and psychomotor processes. Results from Bavelier's research program (Anderson & Bavelier, 2011) and other studies suggest that the ability to flexibly alternate between tasks could lead to improvements in students with physical difficulties.

Time spent on games

- Time on task in technology-based instruction may be used for assessment or to guide personalization of learning. Although studies have shown that time in simulations and computer games may not always track student learning because of student excursions to explore and answer their "what-if" questions (Hoover & Fletcher, 2011), it has been found to be far more closely related to learning and transfer than seat time in classroom learning.

Does game playing increase learning?

- Learning was found to increase if games conveyed content actively rather than passively and learners could access the game as often as desired. More learning occurred in the comparison instructional method if it engaged learners actively. Surprisingly, games receiving higher ratings for fun were no more likely to yield gains in motivation than those receiving lower ratings.

School learning

- Roe and Muijs (1998) found that students who were frequent game players were often also frequent television viewers, or listeners to music and radio. They read less than others, spent less time with friends, had lower self-concepts and self-esteem, and scored lower on all indices of school learning and achievement. Harris and Williams (1985) found that students' English grades were negatively correlated with both time and money spent on games. Gentile's integrative article (2011) reported similar effects.

So, are games beneficial?

- It depends on the goal we want to achieve: they may be beneficial for developing certain skills but limiting in their effectiveness of developing other skills.

Does play support learning?

- Lillard and colleagues have showed some effects of play on language skills but inconsistent results on reasoning, creativity, and various academic skills. Although these studies were all labelled "play," many were adult controlled activities rather than child-controlled play. Also, most play studies are short term so results related to long term cognitive gains are often unclear or absent.

Play based learning: maths

- Studies have found many positive learning results for children's playful engagement with literacy and numeracy. Kami has demonstrated that various types of mathematical knowledge, such as numeracy, classification, and spatial/temporal relationship understanding can be fostered by children's playful interaction with materials and games that foster such knowledge. Also, Griffin, Case, and Siegler have connected playful mathematics activity to increase development of the "central conceptual structures" of thought.

Need more research on digital play

- How can we use digital play to support language and social skills development and learning for children with hearing impairment?

Games for deaf people

- Another promising and interesting alternative to reinforce learning experience, today, is the use of educational games. The usage of educational games can consume the attention of learners and increase their motivation and engagement which can then lead to stimulate learning (Bourgonjon et al., 2011; McClarty et al., 2012). Educational games can increase creativity, improve self-confidence and provide visual, tactile and intellectual stimulation (Griffiths, 2002). However, it should be noted that most of the research to date on educational games focused only on learner with typical development. Rather less is known about designing educational games for learners with special needs, including the Deaf and Hard of Hearing (DHH).

Computer avatars

- For students with severe hearing disabilities, the use of computer animated avatars within educational contexts is proving to be successful and holds particular promise. The 3D characters can act as a powerful communication medium for deaf learners to display knowledge in sign language and make instructional materials completely accessible to them (Vesel, 2005; Adamo-Villani & Hayward, 2010; Kipp et al., 2011, Jaballah & Jemni, 2013). Besides, by appearing on screen as embodied entities, whether humans, or anthropomorphized characters and animals, these graphical entities can increase effectively learners' attention and motivate them to keep interacting with the content presented (Mahmood & Ferneley, 2006; Deuchar & Nodder, 2003).

Computer games

- Despite the controversy surrounding the usefulness of computer games in encouraging learning (Barlett et al., 2009; Prot et al., 2012), a large amount of evidence proves that such games could be an effective way to impart knowledge and provide personalized learning opportunities for students: being a strong motivational attractive, the usage of such software category as learning objects can amplify the students' potential of exploration and imagination, providing moment recreation to didactics, involving investigation, reflection and learning (Mitchell & Savill-Smith, 2004; Egenfeldt-Nielsen, 2007; Silveira et al., 2011). In this sense, Papastergiou (2009) and Gee (2006) claimed that computer games are hugely successful in engaging and motivating learners to spend more time and effort on problem solving and learning skills.

When are computer games useful?

- Nevertheless, it is important to point out that designing and developing educational games that could effectively support the process of learning, need to satisfy the following criteria: the educational games should be designed properly, meet the abilities of the students, integrated with curriculum and classroom activities, and monitored by parents or teachers (Bourgonjon et al., 2011).

What kind of play, what kind of learning?

- There is lack of clarity in research in terms of drawing links between play and child development and learning. There is variation in what we mean by play and also the context it takes place and most importantly the profiles of the children involved. What kinds of learning experiences (e.g., free play, guided play, direct instruction) best support young children's learning of content and skills?

Conclusion

- Educators implementing play-based learning curricula are currently faced with the challenge of integrating academic standards within play-based pedagogy. An integrated approach to play-based learning that addresses both developmental and academic benefits is recommended.

Conclusion

- It is not 'either or' but we need to be aware of what we mean by play-based learning and the extent to which it is goal oriented.

- Child-directed activities (free play) are situated at one end of the continuum while teacher-directed play (learning through games) falls at the other end, with mutually directed play (collaboratively designed play) falling in the middle. What is beneficial depends on a child's circumstances.

Practice implications

- How should digital play based learning be used for children with disability and those with other forms of disadvantage? Scaffolding is crucial but to what extend adults should structure / intervene with children's play. Is there such a thing as an optimal level of involvement?

What's next?

- In terms of research or practice:
- what would you like to do to better implement play based learning in your practice?
- What sort of research would like to consider?
- How will we go about it?