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Intensive modes of study and the need to focus on the process of learning in Higher Education

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Intensive modes of study and the need to focus on the process of learning in Higher Education

Abstract

In the context of a constantly evolving international higher education sector, this commentary emphasises the need for consilience between basic research on learning processes and observations from intensive modes of study. Following a discussion of conflicting evidence on optimal learning time frames, we advocate for seeking alignment between classroom practices with underlying learning mechanisms. We argue for a unified understanding of effective learning beyond notions of the credit point hour or volume of learning, focusing on processes rather than mere inputs and outputs. A collaborative approach between researchers, educators, and policymakers aiming for consilience has the potential to provide practical insights and strategies to enhance student learning and success. Understanding the mechanisms beneath the impact of intensive modes of study, as outlined in this special issue, has the potential to advance the conversation about quality higher education for the 21st century.

Practitioner Notes

1. Considering the processes of learning has the unrealised potential to enhance learning in intensive modes.
2. Working with researchers in the learning sciences and educational psychology provides opportunities to look for consilience between practice and learning processes.
3. Aligning observations from practice with underlying mechanisms provides an opportunity to contribute to evidence-informed policy.

Keywords

intensive mode, learning processes, spaced practice

Introduction

How long does it take for a student to acquire meaningful knowledge or skills? This is a question that is difficult and complex to answer, given how higher education systems are set up around the world. For example, at the national policy level, specifically (but not exclusively) within the Australian context, there is a strong emphasis on the input and output aspects of learning. The discussion about quality higher education tends to focus on funding, pathways, programs, student diversity (inputs) and student satisfaction, graduate employment, and learning outcomes (outputs). There is little discussion or codification of the bits in between. This situation raises questions about the appropriate time frame for study in a program in higher education. Our intention in this commentary is to delve into the apparent neglect of learning processes in higher education and how this neglect has left open questions about how long programs and modules within them should be to maximise student learning and success. We will then chart a course for resolving some of the remaining uncertainties.

Although we make the case here that processes of learning have been largely overlooked in higher education policy, they have featured prominently in learning theories applied to this context. These theories provide a lens for understanding where the emphasis of policy has been over time. For example, through the 3P (presage–process–product) model (Biggs, 1993), it becomes apparent that there is an overemphasis on two of the three elements, leading to an underemphasis on the remaining component: the process. Similarly, Soderstrom and Bjork (2015) argue that learning is both process and outcome (or, as they frame it, performance) but only the latter tends to be considered. The process of teaching obviously gets some attention in higher education (e.g., Harrison et al., 2022), but the process of learning is largely overlooked. Consequently, this neglect has resulted in the adoption of simplistic indicators to assess and understand learning processes as they occur over time. As a result, the question of how long it takes for students to accumulate any meaningful quantity of learning remains unclear, as do the mechanisms behind learning in intensive modes.

Contextualising Intensive Modes and Processes of Learning

The issue of how long it takes to learn anything meaningful in formal educational environments has been a topic of longstanding debate in the scholarly literature, particularly regarding how learning progress is assessed and inferred. One notable example of this issue is the ongoing debate surrounding the notion of the credit point hour (see Shedd, 2003), which has been widely discussed within the academic community as a potentially flawed method for measuring and understanding learning progress (Pardos et al., 2023). In the absence of a deeper understanding of the “third P,” the credit hour or a “volume of learning” as it is referred to in the Australian context, is used as the crude yardstick by which the process of student learning is systematised for the purposes of policy and practice in higher education. In the Australian context, this volume of

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learning requirement is codified in the Australian Qualifications Framework and enforced by the Tertiary Education Quality and Standards Agency (TEQSA) (see TEQSA, 2019). In turn, this means that the length of time of all higher education qualifications needs to align with a set of uniform and arbitrary time frames, regardless of differences in discipline or any requirements or desires of accrediting bodies. The policy and regulatory settings, therefore, do not provide evidence-informed guidance on the suitability of intensive modes of study.

It is widely recognised that learning encompasses both processes and outcomes (Dunlosky & Rawson, 2012). With the policy and practice focusing on the outcomes (particularly intended learning outcomes), less attention is given to the development of learning competencies, trajectories, or alternative ways of understanding learning processes. This issue has been highlighted by the emergence of generative artificial intelligence (AI), such as ChatGPT (see Lodge et al., 2023). The reason behind an increased focus on learning processes is that generative AI can now produce artefacts previously used to infer that learning had occurred. Outputs can be generated independently of the process. Artefacts such as essays, lab reports, and exam scripts are widely used to infer that the learning process has played out, hence the problem. The overemphasis on outputs and assessments aligned with those outputs, as per the ubiquitous notion of constructive alignment (Biggs, 1996), has left higher education vulnerable to these emerging technologies. The neglect of the learning process is now creating significant issues for higher education policy and practice.

These emerging issues are symptomatic of policy and practice approaches that do not place sufficient importance on learning as a developmental process that occurs over time. Consequently, it is challenging to determine the appropriate duration for a course module, or degree program, or to assess quality in higher education (see also Harvey & Green, 1993). In fact, when considering learning from a more holistic perspective, the most valuable aspect of the act of learning should be that of defining and understanding the mechanics of the very process of “learning”. The use of “competency” or “capability” to describe the requisite learning and codify it into acceptable and achievable chunks, usually framed as a learning outcome, has gone some way to addressing this. Some scholars suggest that a competency-based approach rather than one locked to periods of time might be more appropriate, as it emphasises the development of specific skills and abilities (for a review, see Burnette, 2016). Competency-based learning has typically been the focus in vocational settings, but also overemphasises outcomes and has often been considered too challenging to implement in higher education (Everhart & Seymour, 2017).

The insufficient emphasis on learning processes also means that traditional approaches to learning in higher education lack a sufficiently rigorous foundation. What is still missing is a clear and tacit understanding of the mechanisms of the “process” or “processes” that are occurring within the minds of the learner. Meeting a competency or outcome provides less than ideal insight here. Craver and Darden (2013) compellingly argue that explanations of complex biological (and, by extension, social) situations devoid of an understanding of the underlying mechanisms are inherently impoverished. It is vital that the intellectual, mental, and emotional means and mechanisms by which the learning is achieved are understood. Although it is possible to measure the outcomes of learning, it would be so much more educationally valuable for policy and practice to be able to monitor, support, and facilitate learning as a progressive and constructive process while it is occurring (see also Swiecki et al., 2022). The neglect of learning processes, therefore,

also represents a lost opportunity, one that AI is likely to both exacerbate and assist with (see Lodge et al., 2023).

A greater emphasis on how learning is unfolding over time as students engage with modes of study of varying lengths could help to address the vulnerability in the system exploited by generative AI. Although higher education systems and institutions need to adapt to the emergence of these new technologies regardless, we argue that the underlying uncertainties related to different durations of study and how to adapt to generative AI are entangled (as per Fawns, 2022) and share a common root cause. Combined, there is the potential for both areas to benefit from a closer examination of learning processes. Alternatively, ongoing uncertainties about both have the potential to magnify existing issues. We can do a better job than to oversimplify the complex process of learning through the credit point hour or a relatively arbitrary volume of learning. Clarity on these issues will help guide the entangled development of intensive modes of study and emerging technologies, particularly given the intersection of intensive modes and online and blended approaches (e.g., Roddy et al., 2017).

Despite the latent potential of a deeper understanding of learning processes, the solution to the problem of not adequately aligning policy and practice with how learning occurs over time for students is not as simple as making a wholesale shift to AI-enabled personalised and competency-based approaches. There remains a need to consider how cohorts of students will learn together over time and address the ongoing question of the ideal duration for their collaboration. This is why the issues associated with generative AI are entangled with questions about intensive modes of study. For better or worse, the establishment and maintenance of a cohort of learners necessitate a set period for which those learners will work together towards a common goal. Generative AI poses a risk in that it could push higher education away from a cohort model to a more adaptive, transactional, and hyper-individualised approach. Theories founded in constructivism (as per Piaget, 1971) and in socially shared regulation of learning (e.g., Panadero & Järvelä, 2015) strongly support the value of students learning together in a group over a set period both for their learning and for learning how to learn effectively. Although it might be unclear which duration is best, the evidence suggests that it will be important to keep a form of a cohort model into the future. However, this time cannot be dictated by crude policy settings, such as those centred on the credit point hour or a volume of learning. Niemiec and Ryan (2009) point out that heavy-handed and blunt external drivers of learning situations tend to negatively impact the development of relationships, leading to impaired learner competency and mastery. Determining the appropriate length of time for a cohort of students to be together and focus on a single module within a broader program of study remains an open question and warrants further investigation to inform more nuanced approaches to practice and policy. The ongoing development of intensive modes of study is inherently entangled with these broader issues.

Learning in Intensive and Traditional Modes of Study

Within this context, and as reported in this special issue, there is emerging evidence regarding the impact of various models of intensive modes within a degree program. Importantly, these models veer away from the traditional time-based offerings in universities globally. For instance, the “block model” implemented at Victoria University (VU) in Australia and replicated in other institutions has demonstrated that students from diverse backgrounds can be successful in their

studies by engaging in modules that do not follow the traditional 12- to 15-week semester structure (see Jackson et al., 2022). The VU model has had a demonstrably positive impact on student experiences (Ambler et al., 2021). This model is one of many different types of intensive modes of delivery. For a review, see Samarawickrema et al., 2022.

It is important to point out that it is not simply the length of time of the module offering but as described by Jackson and colleagues (2022), the design of the modules was also based on principles of high-quality pedagogy in higher education, such as those espoused by Gibbs (2010). In some cases, the models also involve significant online components or are delivered entirely online (e.g., Roddy et al., 2017). Other approaches in this vein include trimesters, residential offerings, and various other forms of condensed study periods, most commonly ranging from 2 to 10 weeks with varying degrees of online learning. The level of evidence behind and alignment with principles of high-quality higher education and the use of educational technologies across all these permutations is impossible to gauge. Mitchell and Brodmerkel (2021) argue that, although these intensive modes of study are increasing in popularity, the work on understanding why they are effective is only just beginning. High-quality design is no doubt part of the equation, but more depth in the exploration of intensive modes of study is needed.

None of this is to say that existing approaches are supported by a wealth of evidence either. Traditionally, Western universities have placed significant emphasis on the two-semester-a-year model, a structure that dates back hundreds of years and is misaligned with modern circumstances and the needs of 21st-century students (Trow, 2007). This model has persisted more due to tradition than evidence-based reasoning. There has been debate about the suitability of this structure for well over a decade (e.g., see Muldoon, 2012). The emergence of intensive modes, such as block models, trimesters, residential learning, and other non-traditional time periods for learning, suggests that there may be no definitive reason to believe the standard 12- to 15-week semester is the most effective way for students to learn (Scott, 2010). The social benefits of the traditional model of offering in higher education can be achieved over shorter time frames, when these offerings are designed with care, taking into account the available technologies (as per Roddy et al., 2017) and the needs of modern students (as per Jackson et al., 2022). These shorter offerings do not necessarily provide the kind of competency-based or personalised approach we described earlier in this commentary but do provide flexibility in other ways. For example, the faster cycle time from module to module allows different options for taking a break for a study period without the consequences that would come with taking half of the academic year away from study, as would occur when taking a break in a traditional offering. These models also allow for year-round study to accelerate the process towards the completion of a qualification, as advocated by Scott (2010). In sum, there is little to justify the continued use of the traditional time periods for study in higher education and emerging evidence that there are viable alternatives.

The Science of the Learning Process Over Time

Approaching the question of how long it should take to study from a different perspective, the science of learning presents key principles regarding time frames for learning, which have been rigorously tested and found to be robust across various settings. These principles include distributed learning and interleaving (see Cepeda et al., 2006). Distributed learning, also known

as spaced practice, refers to the practice of spreading learning activities over time, which has been shown to be more effective than cramming or massed practice (Rohrer & Pashler, 2010). Interleaving involves mixing up topics or learning activities rather than continuing to focus on one area or task (Brunmair & Richter, 2019). On the surface, both these effects suggest that a longer study period and studying in multiple modules simultaneously is the most effective way to temporally structure the learning within a degree program (Lodge, 2018). What this means for intensive modes of study remains unclear. There is not enough evidence available to know whether the time frames common in intensive modes of study allow for sufficient spaced practice or interleaving to occur.

These uncertainties speak to the challenges in applying foundational research, such as the principles of spaced practice and interleaving, to real educational environments. This is indeed the case with applying this research to the complex situations that intensive modes of study respond to and are offered in. The bulk of the research conducted on spaced practice and interleaving has been done in an experimental psychology laboratory and the core outcome of interest is how much participants remember (for a prototypical example, see Cepeda et al., 2006). The challenges of translating this basic research to higher education have been discussed at length in the literature (Lodge, 2016). Although it is true that basic research needs to be translated with great care and that the purpose of higher education goes far beyond remembering things, the lack of alignment between the mechanisms evident through basic research and the observations in real-life settings suggest that there are key parts of the puzzle missing.

There are instances where a level of alignment between underlying mechanisms and observations in educational settings has been achieved. Take, for example, the important role that errors play in learning. The basic research strongly supports the benefits of making mistakes while learning over error-free learning and provides an explanation of how this occurs (see Metcalfe, 2017). The results of these studies align with a growing body of observations demonstrating the importance of errors and difficulties in learning in applied higher education settings (Nugent et al., 2019). Taking this example as symptomatic of the issue at hand, there is insufficient evidence, either way, to suggest that there is or is not enough time available in intensive modes of study for safe failure and errors to occur. This is despite there being sound evidence of the importance of errors in learning across levels of analysis from the laboratory to the classroom.

There remains a conflict in ideas about the benefits and downsides of intensive periods of learning, indicating that more research is needed to understand the underlying dynamics (Dunlosky et al., 2013). It is possible, for instance, that while students are studying in intensive modes, the size of the module itself and the amount of material covered may still allow for an element of error, spaced practice and interleaving within an individual module, replicating the situation as it would be across multiple modules in a 12- to 15-week semester. There has been some research into the impact of these alternative time frames for offerings on students (e.g., Kuiper et al., 2015). However, as is the case with the higher-level policy settings, there has been a strong emphasis on inputs and outputs when it comes to these alternative approaches (e.g., see Jackson et al., 2022). The processes that students go through while learning in these modules are similarly shrouded in mystery. The evidence seems clear that intensive modes of study are working for many students, but the mechanisms responsible remain ambiguous, at best.

The Quest for Consilience

When conflicting ideas or principles emerge from different levels of analysis, the ultimate aim across research, practice, and policy should be to achieve a level of consilience. This means reconciling the differences between the implications emerging from basic research on time periods and learning, and the data emerging from non-traditional semester time frames. This alignment should then be reflected in policy and regulatory settings. To our knowledge, there is currently no clear way to reconcile these seemingly incongruous results. However, this does open up a new area of inquiry to better understand how these diverse outcomes can make sense (Wilson, 1998).

In the age of AI, there is a tangible opportunity to delve deeper into how learning processes work with real students (Woolf, 2010). The lack of consilience between levels of analysis and our understanding of learning processes in higher education can be seen as a major problem. However, the objective of this commentary is to frame this issue as an opportunity for a deeper understanding of time frames and learning. The traditional semester model has existed for centuries, but now we possess the tools and ability to re-evaluate it. Currently, we find ourselves in a situation where the quality and assessment methods of student learning in higher education are being tested (Lodge et al., 2023).

The opportunity at hand is not just to consider the most effective time frames for helping students succeed in higher education, but also to critically examine the learning processes and individual trajectories students take throughout their studies. This will enable us to better understand how to create a higher education system that is suited to the complex, data-driven, and digitally enhanced society of the 21st century. A focus on competencies and personalisation will undoubtedly also need to factor into these future directions. However, even with the major advances in AI, it is difficult to imagine that there will not still be a critical role for modules of learning that bring together students and teachers for a set time frame to work together through a specified volume of ideas, concepts, and ways of thinking.

At a broader level, there is an opportunity for researchers and educators to collaborate and engage in interdisciplinary efforts to bridge the gap between the principles of learning derived from experimental psychology and the practical realities of higher education (Sawyer, 2014). Such collaboration can help inform the design of learning environments, assessment methods, and teaching strategies to better align with the learning processes and outcomes that are crucial for success in today's rapidly evolving world. A quest for consilience, when successful, will provide a strong foundation for informing practices and policies that will be of most benefit to learners and ensure that they engage in learning that sticks with real impact. The evidence presented in this special issue and elsewhere shows the benefits of intensive mode offerings for students. A deeper understanding of the mechanisms leading to these benefits has the potential to take a worthwhile approach to supporting students and make it even better with an even greater impact for a greater number of students. These benefits will also be amplified if a level of consilience can be found and integrated into policy and regulation such that higher education can move beyond the crude yardsticks of the credit point hour or volume of learning.

Conclusion

Exploring intensive modes of study in higher education and their relationship to learning processes and outcomes presents both a challenge and an opportunity. By examining these issues through the lens of consilience, we can work towards a more comprehensive understanding of how learning unfolds and identify the most effective strategies for supporting student success (Sawyer, 2014). The discussion around intensive modes of study, a snapshot of which is evident in this special issue, is occurring in a rapidly evolving global context. Complex health, environmental, technological, and geopolitical factors increasingly impact on students and on higher education institutions. Decision-making for all stakeholders in this context is fraught. It is understandable that decisions are being driven by the need to respond to rolling crises and not by the evidence at hand. Consilience between the mechanistic aspects of learning and the observations coming out of the evaluation of intensive modes of study would provide a stronger foundation for adapting to the change students, institutions, and systems constantly face. As the landscape of higher education continues to evolve, driven by these external factors entangled with advances in technology and a more diverse student population, the pursuit of a more nuanced understanding of learning processes and time frames will become increasingly important if higher education is to continue to serve its mission of providing meaningful learning experiences to students.

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Conflict of Interest

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