

# **Acquiring PM skills in secondary schools: a mandate for curriculum change?**

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## **Abstract**

Project management (PM) is a rapidly expanding discipline being practised across many sectors. Internationally, there are growing initiatives launched at introducing PM to secondary school students as the discipline has growing workplace relevance.

This exploratory research aims to understand the views of key stakeholders in relation to the benefits they perceive PM skills would confer to secondary school students who are on the cusp of moving into the workforce or pursuing further studies.

Taking an inductive approach, twenty stakeholders with an interest in the secondary school curriculum were interviewed. Although findings did not indicate a strong support for introducing PM as a school subject, there was a strong desire to incorporate experiential learning into the curriculum to support the development of soft skills and life skills which stakeholders perceived students were currently lacking. In particular, the need for more communication and critical thinking skills as well as financial and personal management skills was expressed as interviewees felt these areas would better prepare young adults for the world of work and would support them in their personal lives.

The timing of this research fortuitously coincided with a review of the senior cycle curriculum carried out by the National Council for Curriculum and Assessment (NCCA). Similarly, their findings highlight the need for more active learning methodologies be used in the classroom along with a greater focus on developing higher-order thinking. Teacher unions are encouraged to support the implementation of the NCCA's recommendations. Finally, industry stakeholders are encouraged to use their expertise to help design high-quality Transition Year programmes to help establish realistic workplace goals and expectations.

**Key words:** Project management, project-based learning, curriculum change, constructivism.

## **Introduction and Motivation**

The speedy rise of the project management (PM) discipline is impressive: despite its formal emergence in the 1950s (Morris, Pinto, & Söderlund, 2011), it has quickly spread to other sectors and continues to evolve rapidly giving rise to new PM methodologies, tools, practices, and competencies (Zwikael, 2009). Projections indicate 87.7 million people will work in project-oriented roles by 2027 (PMI, 2017) and as some aspects of PM are considered generic (Crawford & Pollack, 2007), its applicability to many professions further propagates its practise and enables it to evolve without being tethered to a specific industry.

With the rapid growth of project-oriented work, educators have taken steps to introduce a PM curriculum to secondary school students (SSS). Systematic efforts to do so have been led by the Project Management Institute Educational Foundation (PMIEF) in the US whose strategic objective is to educate young people in PM skills and competencies (PMIEF, 2019a, 2019b). In 2017, more than 9,275 educators and 231,000 youths worldwide were introduced to project management with the support of 196 local Project Management Institute (PMI) chapters (PMIEF, 2017a). To achieve their goal, PMIEF developed PM curricula for educators (Baldwin, Kec, Mckeown, Golderer, & Snyder, 2013) and resources for students (PMIEF, 2018). Still, despite having created over 40,557 educational resources in twenty-four languages (PMIEF, 2017a) PMIEF acknowledges that ‘bringing PM into classrooms globally is a complex, slow process that is not easily replicable’ (PMIEF, 2019a, p. 3).

Receiving opportunities to cultivate project skills whilst in education provides students with the necessary experience to develop tacit PM knowledge alongside explicit PM knowledge (Pant & Baroudi, 2008). This is increasingly important for students entering into the modern workplace where innovation and knowledge generation eclipse capital as drivers of economic growth (Hendarman & Tjakraatmadja, 2012). Participation in a knowledge economy does not suggest that a fixed cache of knowledge or expertise is principally required; rather, stress is given to the application of that know-how to achieve an output (OECD, 2001).

The functionality of project teams to collaborate and generate conceptual or tangible content as well as to analyse a situation and strategically broker solutions in varying contexts is valued because it can be broadly applied to many workplace objectives.

Employers now requires non-academic skills to be developed in tandem with standard literacy and numeracy skills (Stasz & Brewer, 1999) and this lends credence to the belief that cultivation of PM skills, *prior to entering the workforce*, would better prepare young adults for the world of work. This research aims to understand the views of education stakeholders in relation to the benefits they perceive PM skills would confer to secondary school students (SSS) in Ireland on the cusp of moving into the workforce.

## **Literature Review**

The introduction of PM skills to SSS is a recent phenomenon and there is a dearth of academic literature on the topic. If PM is to be introduced onto the curriculum, it is important to understand the potential impact it would have on student learning.

The PM discipline is heavily influenced by professional industry bodies who have developed Bodies of Knowledge (BoK) that outline technical hard skills and define methodological issues associated with PM practice (Association for Project Management, 2019; Project Management Institute, 2017). However, increasingly, greater attention is given to the centrality of people to successfully drive projects. The demonstration of soft skills such as communication, leadership, decision-making, teambuilding, creativity, conscientiousness, and critical-thinking are strongly recognised as important for PM professionals (Belzer, 2001; Geoghegan & Dulewicz, 2008; Müller & Turner, 2010).

The opportunity to advance PM skills, refine interactions, and undergo sense-making with team members is an iterative process which is developed over time as new projects and initiatives are undertaken (Fisher, 2011). This process is rooted in constructivism, albeit outside a formal academic setting. Preeminent constructivist theorists postulated that learning takes place in a social context in which individuals construct meaning about the world around them. Jean Piaget saw humans as part of the natural world where stimulus received from interaction with the environment shapes an organism's understanding of the world (Glaserfeld, 2005; Piaget, 1964); Lev Vygotsky emphasised *in situ* learning, stating that the classroom should enable children to debate, explain, construct and deconstruct ideas in a non-hierarchical setting (Jaramillo, 1996); Jerome Bruner argued that teachers should support students in developing habits that motivates them to seek out knowledge and that it is essential for students to engage in problem-solving processes which can be applied to future scenarios (Bruner, 1961). Constructivists assert that the

purpose of education is not to create automatons who think and perform in a uniform manner, but rather to create individuals who are ‘creators, inventors, and discoverers’ (Duckworth, 1964, p. 175).

## **Methodology**

To determine if the curriculum in Ireland should accommodate PM as a subject, a relativist position was held understanding that PM is a ‘social construct’ (Morris et al., 2011, p. 15), situated in the social sciences field (Turner, 2007). Projects are inherently social arrangements with structural properties (Cooke-Davies, Cicmil, Crawford, & Richardson, 2008). A qualitative approach led through inductive research was taken.

A decision was made to sample parents, educators, students, and curriculum authorities who are recognised as key drivers of curriculum change (Macdonald, 2003). Interviewees included: 1) researchers working in education policy and design specifically relating to the secondary school curriculum in Ireland, 2) a PM industry specialist with an established link to SSS, 3) educators trained in project-based learning (a constructivist methodology primarily used in teaching PM to SSS), 4) students who had been taught a PM curriculum, 5) educators who had not received training in PM, 6) international educators who had previously piloted PM curricula abroad, and 7) parents of SSS.

The study aimed to understand a) the perspective of the interviewee with respect to the current secondary school curriculum, and b) their perceptions on how the introduction of PM would impact the learning outcomes of students. Casting a wide net was deemed appropriate for an exploratory study where previous research is lacking.

Twenty semi-structured interviews were conducted, electronically recorded and coded to allow themes to emerge (Gibbs, 2018). Emphasis was placed on constructing open-ended, non-leading questions to avoid influencing views (Mack, Woodsong, MacQueen, Guest, & Namey, 2005) and to respect a ‘symmetry of potential outcomes’ (Saunders, Lewis, & Thornhill, 2016, p. 30). Interview questions were tailored to each group but baseline questions relating to demographics and perceptions of the current education system’s impact on student learning were posed to all participants. Key PM knowledge areas and sample curricula used to teach PM to SSS were shared with interviewees as a basis for the discussion. This information—as well as core interview questions—were circulated to participants prior to meeting to ensure comprehension and to enhance reflection.

Confidentiality and anonymity were guaranteed, and identities were coded. However, the interviewee's organisation/profession is stated as removing all markers may give 'the findings of the research a spurious generalizability' (Walford 2005).

The category, 'Students who received PM training' fell short of its target. Two former SSS who had been taught a PM curricula as part of trial PM programmes were identified to participate in interviews and it was anticipated that the 'snowball effect' would enable more candidates to be identified (Saunders *et al.* 2016). However, one student could not participate and the other was unable to make referrals.

| Stakeholder Category   | Organisation   | Location       | Code     | Interview date | Interview setting          | Interview Duration (minutes) |
|--|--|----------------|----------|----------------|----------------------------|------------------------------|
| Researchers working in Education Policy and Design                                     | Bridge 21  | Dublin         | 20-M-EPD | 09/08/2019     | Phone                      | 52                           |
|  | ESRI   | Dublin         | 18-F-EPD | 31/07/2019     | Skype                      | 30                           |
| PM Industry Specialist   | Ireland Chapter of PMI   | Dublin         | 16-F-PMS | 22/07/2019     | Phone                      | 71                           |
| PBL practitioner   | Researcher, PBLWorks   | USA            | 19-F-PBL | 31/07/2019     | Electronic; Zoom           | 51                           |
|  | Educator, Stepside ETNS  | Dublin         | 17-F-PBL | 30/07/2019     | Electronic; Skype          | 61                           |
|  | Educator, Dominican College  | Dublin         | 15-M-PBL | 02/07/2019     | In person, cafe, Dublin    | 45                           |
| Student who received PM training   | Our Lady's School, Terenure  | Dublin         | 13-F-S   | 23/06/2019     | Phone                      | 26                           |
| Secondary school educators <i>not</i> in receipt of PM training                        | Synge Street CBS   | Dublin         | 1-F-E    | 05/05/2019     | In person, home, Dublin    | 54                           |
|  | Westland Row CBS   | Dublin         | 8-F-E    | 05/06/2019     | In person, home, Dublin    | 77                           |
|  | Limerick ETB   | Limerick       | 7-F-E    | 05/06/2019     | Electronic; WhatsApp       | 54                           |
|  | St. Joseph's CBS   | Dublin         | 14-F-E   | 01/07/2019     | In person, cafe, Dublin    | 48                           |
|  | Dublin North East Educate Together Secondary School                          | Dublin         | 12-F-E   | 19/06/2019     | In person; cafe, Dublin    | 73                           |
| International PM Educators who have previously trained secondary school students in PM | German Professor, Retired  | German         | 9-M-IPME | 07/06/2019     | Electronic; Skype          | 43                           |
|  | University of Pittsburg  | USA            | 4-M-IPME | 31/05/2019     | Electronic; Skype          | 92                           |
|  | University of Economics  | Czech Republic | 3-M-IPME | 28/05/2019     | Electronic; Skype          | 64                           |
| Parents of secondary school students who had not received PM training                  | Project manager, 18 year old son   | Sligo          | 6-M-P    | 02/06/2019     | In person, cafe, Athlone   | 53                           |
|  | Project manager, 16 year old daughter  | Dublin         | 10-F-P   | 08/06/2019     | In person; cafe, Dublin    | 37                           |
|  | Project manager, 15 year old son + two children in university ages 19 and 21 | Cork           | 11-M-P   | 10/06/2019     | Electronic; Skype          | 61                           |
|  | Researcher, 15 and 17 year old daughters                                     | Dublin         | 2-M-P    | 24/05/2019     | In person, home, Dublin    | 62                           |
|  | Educator, 11 year old son + 4 recent secondary school graduates aged 19-24   | Roscom mon     | 5-F-P    | 01/06/2019     | In person, home, Roscommon | 53                           |

\*Code = Interview Number - Interviewee Sex - Stakeholder Category

Table 1: Interview Details

## Findings

Three major themes emerged from the interviews which included: 1) an expressed dissatisfaction with the predominant teaching practices in Senior Cycle (SC), 2) a desire for more interactive learning methods to be used in the classroom, and 3) an acknowledgement of structural barriers which impedes curriculum change.

### Dissatisfaction with the Senior Cycle

Many stakeholders expressed dissatisfaction with current teaching practices, particularly at SC. Parents, Irish educators and the student interviewed felt that the Leaving Certificate Established (LCE) promotes the use of rote learning to facilitate content memorisation. Interviewees felt this a) did not equate to student comprehension, b) resulted in

information being forgotten, c) was at times irrelevant to the student's future needs, d) served to only prepare students for the terminal exam, e) did not provide sufficient opportunities for the student to develop life skills, and f) was not valued by employers.

I think for a lot of students, they can learn things, but they don't understand what they're learning...It is just a memory test in sixth year. (14-F-E)

Furthermore, the potential to develop skills—separate from the acquisition of subject information—was identified by parents and educators as being a valuable aspect of formal education. Many felt insufficient attention is given in helping students develop soft skills or hard/life skills which could be used in the workplace or in one's personal life. Soft skills mentioned included: better written and oral communication skills, critical thinking, self-management, giving constructive feedback, teamwork, media literacy, and innovativeness. Hard skills and life skills included better planning, managing one's schedule, budgeting and financial management skills.

#### Desire for More Interactive Learning Methods

Stakeholders highlighted the value of Transition Year (TY) which allows students to work in project groups and enables them to avail of work placements. However, interviewees recognised that the TY programme lacks structure, does not follow a predefined programme, and is not offered by all schools. Still, all interviewees voiced the desire to see more interactive, student-led learning brought into the classroom as it encourages more independent thinking, personal responsibility, and enables students to exert more agency over their own learning.

In instances where project work was part of the curriculum, parents and educators enthusiastically pointed out its benefits, especially for students who were not highly academically accomplished. Project work for these individuals brought out the dormant talents of the young adults and appeared to activate a self-driven interest in learning.

That was obviously a methodology that really worked for him. It got him engaged, it got him interested. And he learned loads. Far more than he would have learned in the classroom, but it seems the subjects he's struggling with seem very much traditional in their approach. (6-M-P)

Several interviewees felt that the education system is designed to streamline students to third-level education instead of highlighting a variety of learning or work opportunities. Although different strands of the leaving certificate exist, they are often viewed as being

inferior to the LCE and some students are stigmatised for choosing these alternative learning routes. Concern was expressed for those students who struggle academically as the education system did not appear to hold them in the same esteem or appropriately cater for their different learning style.

### Barriers to Change

Interviewees strongly felt change to the SC is needed but acknowledged that there are barriers impeding reform.

Six interviewees noted two teacher unions previously discouraged members from participating in the Junior Cycle review process. Although some individuals voiced support for the unions' position, others felt resistance stemmed from educators' reluctance to adapt new pedagogical behaviours.

Other challenges raised included: a lack of awareness amongst parents about the SC review process; educators noting that PM and the associated methodologies used to teach it would not fit into a curriculum already laden by heavy coursework and inflexible timetables; and independent educators' inability to deviate from the targets and values set by the upper echelons of a school.

There doesn't tend to be a specification of a set methodology. But, a kind of backwash of the very exam-based system has been that that has squeezed time and made some of those more innovative approaches less feasible. (18-F-EPD)

Many respondents felt that change to teaching methodologies and to some subjects was needed. However, many participants also felt that the LCE was objective and a traditional part of the Irish educational institution. Although discontent and frustration were strongly voiced, participants did not articulate alternative solutions to the existing system.

## **Discussion and Recommendations**

### Discussion

This research sought to examine what appetite—if any—there was for introducing PM to SSS. Interestingly, most interviewees identified the cultivation of *skills* associated with PM—not the *profession itself*—as most advantageous to student learning. This suggests that the process of acquiring skills through praxis is a necessary feature of preparing young adults for the future.

When voicing their opinions on the quality of education in Ireland, most interviewees described it in positive terms and acknowledged that desired changes such as continuous assessment and attention to student well-being are being introduced in the classroom, especially at Junior Cycle. However, parents and educators interviewed expressed frustration with a points-driven culture linked to the terminal exam which they felt did not fully nourish the intellectual or maturation needs of young adults.

The greatest source of discontent stemmed from rote learning, the predominant teaching methodology that is used in classrooms. Educators noted excessive attention is given to memorising content in preparation for the LCE exam which activates lower-order thinking (LOT) where the goal is to memorise, repeat, recall or ‘regurgitate’ information (as five interviewees put it), but it falls short of the goal of ‘understanding’ that information. Previous research found that students taking the LCE demonstrated a preponderance of LOT ‘both in the assessment instruments and in the performance of tasks by students, in particular the skill of recall’ (Burns, Devitt, Mcnamara, O’Hara, & Brown, 2018, p. 366).

Recalling factual knowledge is not an educational goal that allows students to construct meaning. Higher-order thinking (HOT) and the development of 21<sup>st</sup> Century skills—often identified as critical thinking, problem-solving, communication, collaboration, creativity and innovation (Trilling & Fadel, 2009)—takes place when students engage in activities which allows them to apply their learning to new situations they encounter (Larson & Miller, 2011; Saavedra & Opfer, 2012). Knowledge transfer associated with deep thinking is essentially a *future-focused* activity whereas information retention relates to the *past* (Mayer, 2002). As age 16 – 19 is a critical age for social and intellectual metacognition and the development of HOT skills (Burns et al., 2018; Magolda, 2004) students not afforded an opportunity to utilise their learning are being done a disservice.

The recognition that content memorisation and information recall does not suit the learning needs of students is gaining traction. The Department of Education and Skills Chief Inspectorate recently assessed the quality of learning in many post-primary classrooms as ‘unsatisfactory’ and recommended that more ‘student-led activities’ be used (DES, 2016a). *Ireland’s National Strategy 2025* (DES, 2016b) and the *Action Plan for Education 2019* (DES, 2019) both identify HOT abilities and 21<sup>st</sup> Century skills as

essential in the marketplace. However, it is unclear if the amplification of this issue will result in curriculum change. Powerful stakeholders have been advocating for more student-centred learning for over twenty years. The Irish Business and Employers' Confederation (IBEC) have been a strong proponent of curriculum reform by: emphasising personal development over exam points (The Irish Times 1998); encouraging the 'development of critical thinking in students' (IBEC 2012); and advocating for a plurality of 'teaching and learning experiences' (IBEC 2018). Indeed, in 2012, Ruirí Quinn, then Minister for Education, initiated a review of the Junior Cycle citing rote learning and a points-driven system as barriers that did not 'lead to positive learning experiences and outcomes' (DES, 2012, p. V).

Recently, the National Council for Curriculum and Assessment (NCCA) completed a review of the SC, and although they have yet to submit their recommendations to the Minister for Education, their findings indicate that the curriculum needs to: promote HOT, place greater emphasis on the cultivation of soft skills, and give more attention to the development of life skills (NCCA, 2019a, 2019b). However, similar to the findings of this research, although it was found 'active teaching and learning approaches can enhance engagement and deepen understanding' the time to incorporate such practices is not easily meshed with the existing LCE programme (NCCA, 2019b, p. 12).

These findings suggest that fundamental change to the LCE is warranted as making cosmetic changes to the existing system may continue to value and reward students capable of demonstrating LOT. The potential for *all* students to express HOT can be achieved if instruction is reimagined and infused with innovative practices. Buttressing passive pedagogy diminishes students' ability to activate higher levels of thinking, does not stoke their imagination or curiosity, hampers meaningful participation in the workforce, reduces young adults' ability to handle life challenges as they graduate into adulthood, and may lead students to view learning with disinterest or contempt.

## Recommendations

### *Teaching Methodology*

This research found that interviewees were troubled by the over-emphasis placed on rote learning in Irish classrooms. These misgivings are not misplaced as evidence shows that the intellectual growth of students is better nurtured when young people can apply their

learning to a real-life context. As active learning methodologies enables students to extrapolate, contextualise, synthesise and generate new insights, understanding and solutions, it illuminates an auspicious path for education policy makers. Furthermore, these methods have also been found to be highly effective in boosting the academic achievements of low-performing students and students from disadvantaged communities (Han, Capraro, & Capraro, 2014; Mo, 2017). Consequently, it is recommended that the Chief Inspectorate take proactive role in recognising schools where subject content is being delivered in a cognitively stimulating manner as beacons for others to follow. They can advocate for the establishment of a community of practice (CoP) which can function to provide training and mentorship opportunities to educators and highlight examples of best practice where the curriculum is taught in a manner that activates HOT and supports the development of soft and hard skills. Within the CoP forum, educators can give attention to systemic weaknesses that lead to instructional breakdown and a reversion to antiquated teaching methodologies. Importantly, the CoP can advocate for changes to be administered as a whole-school approach for effective transformation to take place and to ensure educators receive support and peer guidance (Grossman et al., 2019). A whole-school approach may ameliorate timetabling concerns expressed by educators.

### *Union Participation*

The decision for teacher unions to allow their members to participate in the current Senior Cycle review process is welcome (ASTI, 2018, 2019) given the history of the union's abstention from the Junior Cycle curriculum reformation process (MacPhail, Halbert, & O'Neill, 2018; O'Brien, 2016). The unions are encouraged to accept the recommendations of the NCCA given the extensive nature of the four-year consultation process. Furthermore, adapting a stance that is willing to try innovative methodologies and centred around providing constructive feedback will be conducive to making much desired change to the education system.

### *Industry Voice*

The Ireland Chapter of PMI and Junior Achievement Ireland—two organisations who have previously launched PM training initiatives to educators and SSS (BTYSTE\_admin, 2016; Echo.ie, 2018; Glynn, 2015, 2017; JAI, 2018a, 2018b; Malone, 2019; PMIEF, 2017b)—are encouraged to foster stronger ties within the education sector and illustrate

the way in which PM skills could mutually support the goals of employers and young adults. One logical place to start is with TY programmes which give students exposure to businesses and the wider community through work placements stints (DES, 1993). At a local level, schools are empowered with the autonomy to design flexible and innovative TY programmes to help students mature socially and emotionally. If industry experts offer high quality work placements and formalise TY project standards in line with industry practices, TY can be elevated to a more professional transformative learning experience which further supports students in developing better self-confidence, self-esteem, and greater motivation for learning.

## **Conclusion and Future Work**

This research has discussed the potential to introduce PM as a subject to SSS in Ireland by examining stakeholder perceptions. There is substantial research potential in this area and further ground level research would enable policy makers to make better decisions. Researchers may wish to interview educators and students who received PM training from the Ireland Chapter of PMI and Junior Achievement Ireland. Although both initiatives operated independently of each other, they both received support from PMIEF and utilised a curriculum aimed to stimulate HOT. Additionally, comparative research on schools such as Stepside Educate Together Secondary School or Limerick Educate Together Secondary School who have implemented a whole school model using constructivist teaching methodologies with that of traditional schools has the potential to gauge the impact of different learning styles on students.

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