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Choosing Computing Curricula: Industry Needs vs Education Constraints

Offering the right computing courses is a delicate balance of internal and external factors, but how should educational institutions decide?

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Computing education plays a crucial role in preparing students for the future job market, especially in the fast-paced world of technology. Before students go to university, they have various options for computing qualifications. In fact, the 2022 British Computer Society [landscape review of Computing qualifications in the UK](#) reports that there are fifty-one vocational and technical qualifications in computing prior to university study.

Qualification Concerns

However, not all of these qualifications are of the same quality or relevance to what employers need. [Some employers](#) find education leavers lacking in work preparedness, emphasising the importance of work experience aligned with employers' needs. Meanwhile, an [employer skills survey](#) found that approximately 30% of skill-shortage vacancies involved a lack of digital skills.

The [Department for Education](#) states that they aim to fund only high-quality education, aligning post-16 education with employer-led standards by 2030. However, qualification specifications involve more than just workplace components, as other factors also influence the teaching and learning environment. There are organisations and committees working to improve computing education. They provide guidelines, certifications, and support for teachers and students. But with so many organisations and qualifications available, it raises an important question: How do educational institutions decide which computing curricula to offer?

Choosing Computing Curricula

[Research with English educational institutions](#) found that various factors have been identified as important for choosing computing curriculum. One of these is using labour market information, where educational institutions gather data on technological trends and industry needs to inform their curriculum choices. Although important for all subjects, this is pertinent in the fast-changing landscape of computing.

Another crucial aspect is offering qualifications that are relevant to industry needs, ensuring students gain real-world experience and up-to-date skills. Some colleges for instance prioritise qualifications such as digital [T-Levels](#) and apprenticeships, which have workplace components, making them more aligned with industry demands.

The skill set of teaching staff also plays a role, as educational establishments may offer courses based on the expertise of their educators. Additionally, the availability of resources, such as funding, equipment, and network infrastructure, influences the curricula that can be offered. Educational institutions must also cater to the diverse needs of their learners, offering a varied curriculum to accommodate different levels of academic ability.

A final aspect to consider is the familiarity and positive outcomes that may be achieved by teaching certain courses or content. Here, a heavy focus on [performance tables](#) and rankings may influence curriculum choices. However, this focus on performance and student outputs may shift the emphasis away from innovative and industry-relevant content.

It could therefore be argued there are four main aspects which influence the choosing of computing curricula: labour market information, qualification relevance to industry needs, availability of resources, and qualification attractiveness. However, each educational institution may focus more heavily on some aspects than others. But then the question of importance is what should the focus be on?

An Economic Focus

Choosing the right computing curricula is a crucial decision, but there isn't much specific research on this topic. Nevertheless [early research](#) has suggested there is an economic argument regarding computing curricula. This is that education should support learners in engaging in curricula which supports the economy and so they can meet future skills needs.

Therefore, having up-to-date courses with practical assessments and work experience can be highly valued. The digital T-Level for instance seems to align well with industry needs. However, it's worth noting that even though it includes industry placements, it also has some written exams that may not directly relate to real-world job skills.

An economic focus is why [some educational institutions](#) may focus on labour market information. The challenge is whether to consider the broader national trends or focus on the specific needs of the local area. For instance, there might be a demand for certain jobs nationwide, but locally, there may not be many opportunities for students in those fields.

Additionally, not paying attention to labour market information could lead to outdated courses that don't match what the industry requires. As technology and industries keep changing, it's crucial for education to keep pace to ensure students are well-prepared for the job market.

An Education Focus

Despite labour market information that may be available, educational institutions are constrained by their own context. There are finite resources, equipment, and staff expertise. There may be a need for more advanced qualifications or specific equipment, but this may

not be feasible to offer as a qualification. This may lead educational institutions to focus most on what curricula they can deliver successfully given their specific situation.

An [educational argument](#) is that technology will continue to develop and will not stop. Therefore, education should focus more on preparing students for upcoming societal demands. Lifelong learning is a key aspect of this, as students need to be equipped to handle changes in the future, irrespective of specific content or topic areas.

[Some research](#) has suggested that any curriculum itself is just a guide to education. Therefore, the most critical factors in choosing courses are the ones that create effective and successful teaching and learning environments. It's not just about following labour market trends or industry relevance.

When it comes to teaching computing, there are challenges like continuous change, lack of investment, and a shortage of skilled staff. These external factors influence how educational institutions operate and make decisions about their courses. Ultimately, what matters most are the students and their best interests. Curriculum choices can significantly impact their education and future, making it crucial for institutions to make the right decisions despite facing various challenges.

Conclusion

As technology advances, curricula must adapt, and labour market information can become essential in making decisions. However, changing curricula also means adjusting teaching methods, which can be a time-consuming process. Educational institutions need to find a balance between offering courses based on labour market information and industry relevance while considering their own unique situations and preferences.

Focusing on only one aspect may lead to a less effective learning environment. By looking at both internal and external factors and future societal needs, educational institutions can make more informed choices. However, since technology is always changing, continuous research is needed to simplify complex decisions and identify best practices in curriculum choices.

Journal Reference

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