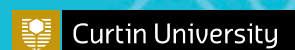


APPENDIX D Employer surveys

from **Double degrees: research pathways, enabling cross-disciplinarity and enhancing international competitiveness**

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2011

This appendix and the related final report entitled 'Double degrees: research pathways, enabling cross-disciplinarity and enhancing international competitiveness' are available for download from <<http://www.altc.edu.au/resource-double-degrees-pathways-uts-2011>>.

Appendix D.1

This report provides the data from interviews of employers which invited opinions relating to:

- experiences re graduates of double degrees*
- expectations re integrative abilities, discipline-interface attributes and expertise*
- to what extent do employers see benefits in double degrees?*
- to what extent are employers more likely to hire double degree students?*
- what do employers think of double degrees as compared to masters, honours and other qualifications such as a diploma in engineering practice?*

Enclosed please find the views of employers....

Employer 1 (Lycopodium Minerals Pty Ltd.)

From an EPCM engineering viewpoint in a minerals processing oriented industry.....

1. Experiences re graduates of double degrees

We have found these persons to be no better (and no worse) than engineers with single degrees. They are not necessarily more intelligent or better educated. Attitude to work and the profession is most discerning factor that we look for.

2. Expectations re integrative abilities, discipline-interface attributes and expertise

We expected double degree persons to be better equipped and more proactive in approach. This has not been the case. Often these persons are more 'bookish' and their communication skills disadvantaged.

3. To what extent do employers see benefits in double degrees?

None.

4. To what extent are employers more likely to hire double degree students?

We are always initially more interested, and this may provide an opportunity for an interview/first ranking selection of candidates. Thereafter it has no benefit.

5. What do employers think of double degrees as compared to masters, honours and other qualifications such as a diploma in engineering practice?

Master is preferred to double degree. Candidates are usually of higher calibre. No experience in diploma in engineering practice.



Employer 2 (Alcoa)

With regard to your questions, it is difficult for me to give direct responses as I have not been involved in hiring people specifically with double degrees. However, I can give some observations ...

Chemical engineers and chemists have particular areas of expertise, particularly the process and process equipment areas for the chem engs and the process chemistry for the chemists. In organisations like Alcoa's research group where chemists and chemical engineers may be required to lead projects involving both aspects of process development, it is easy for them to assume that they know enough to not need the direct involvement of people from the other discipline. Consequently, failure to recognize limitations in ones expertise results in wasted research effort and finances in scaling up processes that work inefficiently.

One advantage of possessing an appropriate double degree is that ones area of expertise traverses one of these interdisciplinary boundaries, so that one is more aware of limitations and expertise in these areas (however, one may still be blind to other areas where expertise is limited). Double degrees of chemical engineering with chemistry, advanced mathematics and computing and with business immediately spring to mind as adding value.

As an employer, I do not believe that we are more likely to employ double degree graduates solely on the basis of having a double degree. More importantly is the graduate's fit with the organisational goals and style – getting the right person for the job is critical; the wrong person can be an expensive mistake. Similarly, masters, honours, double degrees, advanced diplomas are all worthwhile, although conversely appropriate industrial experience is also valuable. Industrial experience, and demonstrating the ability to put theory into practice is critical. More important than double degrees could be appropriate “sandwich” programs in which students obtain up to 12 months industrial experience before graduating. [incidentally, after the survey taken at Chemeca – some industrial experience for academics would not go astray – I think the numbers were something like 51% of academics did not have enough industrial experience to be “real” engineers!]



Employer 3 (Woodside Energy Ltd.)

Woodside does generally not employ Applied Chemists or Extractive Metallurgy graduates but we have employed double degree in primarily Chemical and Mechanical Engineering. Generally we do not go looking for students with double degrees but those who have completed a double degree with results in the top quartile tend to be very good quality engineers and well rounded. We tend look at them as an engineer in their core discipline thus a Chemical ./ Commerce we employ them to be a chemical engineer and expected to work as a chemical engineer for at least the first 10 years.

Per your questions

1. Experiences re graduates of double degrees

Good experience but tend to only take those with high results and the double degree rounds the graduate. But for Woodside we take the product from university (base engineer) and train them with respect to the our work needs.

2. Expectations re integrative abilities, discipline-interface attributes and expertise

Our expectation is solely around the base discipline we are looking for, i.e. mechanical/applied science would only be viewed for their mechanical skills

3. To what extent do employers see benefits in double degrees?

The benefit of students with double degrees is the they are more rounded and have a slightly higher potential to progress further within the company, but initially double degree graduates do not have the same level of depth as their base engineer options tend to be in the second degree requirement.

4. To what extent are employers more likely to hire double degree students?

No more likely than a graduate with a single degree who presents him/herself the same, we pay no more to our graduates with double degrees.

5. What do employers think of double degrees as compared to masters, honours and other qualifications such as a diploma in engineering practice?

Double degree graduates same as degree graduates, Masters and honours we look same as degree but if perform better in first couple of years we promote more rapidly. But I find that of the master students I have interviewed that they do not sell them self as completely "rounded". With our business there is no right answer and all technical solutions are the optimum of safety, capex, economics, operability, constructability and the best technical solution.



Employer 4 (Hatch QED)

Thank you for asking my opinion on the double degree graduates. I have had experience with graduates with their second degree in chemistry and business.

1 & 2.

I have found that they are more productive than a graduate with BEng only. The business side of their training gives them a better overall perspective of the operation of the business. The extra chemistry has been very useful in those double degree graduates because the work we do is very dependent on knowing and understanding the solution chemistry.

3. The benefits I see in a double degree are that the graduate is more versatile and has a wider perspective on their work.

4. When looking for a graduate I am much more likely to hire a double degree, especially in a small company, as you are gaining extra abilities.

5. I am normally not looking to hire people with higher degrees as I am normally not looking for a specialist. If I was looking for a specialist then I would not be looking for a double degree graduate but would look for someone with a higher degree. To me they are a different 'product'.



Employer 5 (Woodside Energy Ltd.)

Here are my quick comments...

1

I personally haven't noticed any significant difference between graduates that have done two degrees and those that have only done one.

2

Again I haven't noticed any significant difference.

3

Despite the responses above, I think that double-degrees are a good thing. I think that the benefits of having some background in Business / Commerce / Economics or something will be useful in the longer-term. In the first years we expect our graduates to do engineering, and I expect that they want to do the same. So in the first few years, the extra study doesn't really help much. However once the graduates move on from doing technical stuff they will probably be better equipped. I would be happy to recommend that good students do the double degree, because it is a lot easier than going back to university after a few years out in the workforce.

4

When choosing students the double degree might be a minor assistance when looking at the CVs and marks. However once it gets to the interview stage, it has no bearing. I would pick the best people based on the interview. I can't remember any occasion where the interview was too close to call and this was the deciding factor.

5

Personally I pay a lot of attention to honours - whether the students have achieved good results in their basic degree. On the other hand a diploma or masters based upon course-work counts very little for me. In terms of an 80% student with the basic degree and a 65% student who has stayed on for further study, there is no contest. The former would be my preference. My attitude is that the latter has probably only stayed on because they couldn't get a job upon completion of their first degree - and I would deliberately ask them why they stayed on in an interview! When I went through uni, the only people to stay on for further study were those with some flaw that prevented them from getting a job straight up. If someone stayed for a PhD because they were very interested in some specific research, then yes that would be impressive, but the other post-graduate study - no.

This is all in relation to picking graduate process engineers. For more qualified jobs, some further qualifications might be useful, but they only are only considered after the relevant work experience.



Appendix D.2

Number of employers interviewed: 10

This report provides the data from interviews of employers which invited opinions relating to:

- experiences re graduates of double degrees*
- expectations re integrative abilities, discipline-interface attributes and expertise*
- to what extent do employers see benefits in double degrees?*
- to what extent are employers more likely to hire double degree students?*
- what do employers think of double degrees as compared to masters, honours and other qualifications such as a diploma in engineering practice?*

Australian Engineering Double Degree Research Project – Survey Results

Respondent	Company	Student	Status
1. William Brazier	Solagift Technologies	Adam Austin	Work experience
2. Howard Austin	Janome Everton Park	Adam Austin	Employed Full Time
3. Ken Gallienne	Ken Gallienne & Assoc	Gavin Bartley	Work experience
4. Des O'Flynn	Energex	Lawrence Claire	Work experience
5. Andrew Butcher	Electro 80	Thet Aung Ko	Self employed
6. Brett Milligan	Airservices Aust	Peter Mee	Work experience
7. Joel Grant	E & E Corporation	Stuart Longland	Work experience
8. Denis Brock	Daher Aerospace	Gregory Anderson	Work experience
9. Greg Hogg	McVeigh Consultants	Sarah Baker	Work experience
10. Leon Davis	SAP Australia	Curtis Parente	Employed Part-Time

Question 1: *When he/she came to work for you, were you aware that he/she was doing/done his double degree?*

Yes - 80%

However some respondents stated it had been some time since the student had worked with them

Question 2: *Are you aware the double degree is a combination of 2 disciplines?*

Yes – 90%



Question 3: *Did you notice that he/she was able to combine the 2 disciplines effectively e.g. showed business proficiency together with the engineering*

1. He was doing the engineering side with us but I can see where it would be useful discussing the business side with clients
2. Yes he has been able to. Mainly his role is electrical engineering but on approximately a weekly basis he helps with the business side. This may be with profit and loss or adding information to an Excel program
3. It wasn't really a requirement as we mainly do engineering. It was really a case of helping someone who was learning
4. He didn't really have the chance as we were mainly interested in the engineering side, that's why we hired him
5. Not for the work he was doing (engineering)
6. Yes he was tasked with both and was proficient in both. I think he found the IT systems we use to be different but he was more focussed on content not output which was fine with us
7. We specialise in IT so that was what he was here for but the engineering side is all good background
8. Yes he was able to combine both and he did very well
9. Sarah was here mostly for engineering on the technical side but I did notice she had a business awareness
10. He is employed in a basic IT support role not on the engineering side

Question 4: *To what extent do you see benefits in double degrees?*

1. I think it is good but I have concerns about removing fundamental engineering subjects / physics
2. If the students can complete them (the double degree) it is fantastic. But I think it is pretty taxing on the students. If parents are able to help financially, then this would really assist the students
3. It is useful to have a broader knowledge with the double degree. Our work is mainly as consultants where we are involved with drawing up contracts to build. What would really suit us is if the double degree was 'Engineering / Law'
4. It means the student / graduate has experience in both fields of engineering and business
5. I think it is very important for their long term career but it would depend on them having an appropriate second discipline
6. There certainly are benefits particularly in our business – a definite advantage
7. As previously mentioned we specialise in IT so that is what we are mainly looking for but it is always good to have that background
8. It depends on the broader direction the student wishes to take. For example, I can see it being a great benefit if the student is looking to get into broader management roles in the future. They could start their career in junior engineering positions and then as they progress and look towards management roles they would already have the qualifications
9. I think in the longer term when they get more involved in management but for the first 5 years they need to do the technical content in engineering



10. He was not employed because of his double degree. I'm not really aware of any benefits of having a double degree except (in Curtis's case) that it may make them more professional and hard working because they are completed a double degree

Question 5: *To what extent are you more likely to hire double degree students than a single degree student?*

1. Doesn't make a difference as long as they can do the job
2. It really gets down to the individual person when hiring them. It is not only the degree but also things such their personality. But if both disciplines pertain to the business, then yes it is fantastic
3. If I had two candidates who were fairly even on their resume and everything else in the recruiting & selection, then it would be an advantage to have a double degree
4. Not really necessary in our business as we are looking for experience in areas which are suitable to our business
5. When going through the recruiting and selection process, it would only make a difference to the total score. They would score a little bit higher
6. I don't work in the HR area but hypothetically the depth of knowledge is certainly an advantage
7. It is definitely an advantage
8. If I had two students straight out of school, one with a double, the other a single degree then I would be looking at the one with the best results. So it would not really make a difference. If I couldn't split them then I would definitely look at the double degree
9. Not to any extent. It would depend entirely on the role
10. I haven't thought about it. I am more likely to hire based on personality rather than double or a single degree

Question 6: *What do you think of double degrees as compared to hiring someone with say a single degree with other qualifications such as a diploma or someone with a masters degree or honours?*

1. I am more comfortable in hiring someone with a single degree plus experience
2. If they are young people then it is a definite advantage. However if it is an older person who also has industry experience then a single degree plus experience can also be an advantage. You need to weigh up the whole package
3. To us what is important is that they have an Engineering degree. Having a broader education whether it is a double degree or Masters or a Diploma on top of the degree is an advantage
4. We look more at merit and experience rather than double degrees or single degrees with other qualifications
5. It would not make that much of a difference. Personally I support diversity in disciplines whether it is a double degree or a single degree with other qualifications
6. They are both good options and have their merits. The only difference with a single degree with other qualifications is the shorter time it takes



7. The double degree gives you a wider spread of knowledge so it is definitely an advantage
8. (Same as for question 5) - If I had two students straight out of school, one with a double, the other a single degree then I would be looking at the one with the best results. So it would not really make a difference. If I couldn't split them then I would definitely look at the double degree
9. To be honest it doesn't really, I think with 'masters' that probably comes later after they have obtained work experience
10. It depends on who is more suited to the position but a double degree does give you a greater skill set

Question 6B: *Would you prefer to hire someone with a single degree who would after gaining some practical experience undertake further studies in engineering or another discipline. Or would you prefer to hire someone with a double degree straight off?*

1. Definitely prefer the former as it suits our business
2. Howard Austin – left message
3. If I had two candidates who were fairly even then I would probably say I would be better off hiring the one with the double degree straight away
4. Probably the double degree as they do not have to spend time going back for further studies. However I can see where the practical experience would also be beneficial. I think it comes down to a case by case basis
5. I don't have a view either way as it actually comes down to who performs best in the recruiting & selection process particularly in a large organisation (Energex). I think what helps the person to develop professionally is the best course
6. It would really come down to who was the best match for the job
7. Would prefer to hire the person with the double degree straight off as you know what you have got
8. I would lean to hiring someone with a double degree straight off
9. Definitely the first option
10. Leon Davis - left message

Question 7: *If we have further questions is it OK to phone you back?*
All are happy to be contacted back



Appendix D.3

We have been able to speak to 14 employers who have had experience with double degree engineering students. We spoke to both people from human resources as well as engineers in senior positions. It should be noted that while RMIT offers a range of degrees combining engineering with various secondary streams, the employers spoken too only had experience with engineering and business double degrees and this is to some degree reflected in the summary of responses below.

Experiences regarding graduates of double degrees

Double degree students tend to be of a higher calibre than their single degree counterparts. In general they are more proactive and have better communication skills. They also have higher expectations of advancement and can be less willing to "get their hands dirty", although this is generally true of all recent graduates.

Expectations regarding integrative abilities, discipline-interface attributes and expertise

The employers surveyed indicated that there were no additional expectations from double degree graduates, as opposed to single degree graduates, in areas such as technical skills. However in areas such as project management, leadership and customer interaction, double degree students are expected to perform at a higher standard. As noted previously it is expected that double degree students will be of a higher calibre although this is predominantly due to the higher entrance requirements for the course.

To what extent do employers see benefits in double degrees? and

To what extent are employers more likely to hire double degree students?

The recurring message was that the calibre of the person is more important than the degree or level of qualification; this in some instances was also applied to postgraduate qualifications as well. Strong abilities in the engineering discipline are paramount and other qualifications/degrees are only a minor consideration. As well as this employers desire a well-rounded employee such that the generic skills (such as communication and teamwork) are just as important as the engineering technical skills and much more important than whether a graduate is a single or double degree. A candidate that has work experience is much more desirable than one without, whatever the qualification.

In terms of career advancement only one employer made the comment that double degree students might be more successful in the organisation. Advancement in the organisation or into management is performance based and degree qualifications have little influence.

What do employers think of double degrees as compared to masters, honours and other qualifications such as a diploma in engineering practice?



In general this will depend on the position. If the masters or honours are technically relevant to the position then it will be a definite advantage. Otherwise there will be no real advantage in one over the other; this is also reflected in starting salaries where there is little difference between those who have a single degree, double degree or masters. Again the point was raised that an employer will try to gauge and compare potential employees, be looking for core competencies and the type of degree most likely won't make much difference.

Some other points of interest raised by employers

- Advancement is often discipline based and/or opportunistic
- Academic performance (but not single or double degrees) may be considered at the first level of promotion after 2-3 years of employment with the company or organisation



Appendix D.4

Number of employers interviewed: 2

This report provides the data from interviews of employers which invited opinions relating to:

- *experiences re graduates of double degrees*
- *expectations re integrative abilities, discipline-interface attributes and expertise*
- *to what extent do employers see benefits in double degrees?*
- *to what extent are employers more likely to hire double degree students?*
- *what do employers think of double degrees as compared to masters, honours and other qualifications such as a diploma in engineering practice?*

Overall, we did not have much luck in reaching employers for this Study. Although we had left lots of voice messages, only two responded to the request and communicated with us about their opinions on the BEng (Mech) & BMgmt Double Degree program. For confidentiality reasons, the names of companies and interviewees are coded in this report.

Company 1: AP

Interviewee: RB

Q1- experiences re graduates of double degrees

A: Has never employed someone with a double degree, doesn't recall ever working with someone who held a double degree.

Q2- expectations re integrative abilities, discipline-interface attributes and expertise

A: No specific expectations about whether a double degree graduate would be better or worse than graduate with single degree, but on the surface would expect that they would have broader knowledge and operating skills.

With regard to integrative abilities and expertise, a double degree could be negative as the graduate would have skills broadened to such an extent they would be unable to be an expert in one discipline. Integration would not be such an issue, but this could depend on what the double combination is.

Q3- to what extent do employers see benefits in double degrees?

A: The positives would be obvious – using example of double degree with mechanical/civil, any solutions, advice, design skills etc would be more comprehensive and holistic than a student with only one area as their background. However, less sure about a double degree like engineering and management, as it would largely depend on the company and the job the graduate had been employed to do.



Q4- to what extent are employers more likely to hire double degree students?

A: Employers will see benefits according to the need of their company and roles required to carry out business, i.e. employers would only be more likely to hire double degree students if it met with their specific targets or needs.

Q5- what do employers think of double degrees as compared to masters, honours and other qualifications such as a diploma in engineering practice?

A: A double degree might be more advantageous than a masters or diploma if the discipline/company has a very technical or specific focus. However if the discipline was less technical or specific, there wouldn't be much advantage in a double degree over the other qualifications mentioned.

Company 2: ELX

Interviewee: BH

Q1- experiences re graduates of double degrees

A: Worked with someone with double degree (can't remember combination, mechanical and something else). Person had some issues being organised but that was due to personality not degree. Haven't employed anyone with double degree he can think of.

Q2- expectations re integrative abilities, discipline-interface attributes and expertise

A: A double degree between mechanical and management would be positive and would make the person more employable. If there is a combination like that it shows the person is eager to pursue interests outside of their technical degree and would probably show the person could effectively move into different areas across a business.

Integrative abilities – would very much depend on person, but also combination. If someone had a degree from two engineering disciplines the way they would work in an organisation and their experiences would be very different to a graduate with say a mechanical and management degree.

Q3- to what extent do employers see benefits in double degrees?

A: Hard to say whether a double would be advantageous over a single as it really depends on combination and specific role the person is employed to do.

Q4- to what extent are employers more likely to hire double degree students?

A: More likely to hire a double degree student? Probably, although dependant on role. Would show graduate has broad skills in complementary areas and is willing and able to look outside of one particular discipline area.

Q5- what do employers think of double degrees as compared to masters, honours and other qualifications such as a diploma in engineering practice?

A: Double degree compared to masters, diploma etc? Again, it is dependant on role. For specialist technical roles, postgrad degree is preferable as it focussed on building skills in the particular specialisation. A generalist technical role would



probably benefit from a double degree more, as the person could offer skills across various aspects of the business and not just have one focus or area they concentrated on.

Due to only a small number of interviewees participated in this study, the information extracted from the comments above certainly may not represent general opinions and experience of wider industries. Nevertheless, there are some interesting commonalities observed in the responses of the two interviewees.

Firstly, both expected that a double-degree student should exhibit broader knowledge and skills, or at least have the ability/enthusiasm to move into different areas across disciplines.

Secondly, having a double-degree qualification is not readily regarded as an advantage in the job market over a single bachelor degree or a master/graduate diploma qualification. Both interviewees stressed that the benefits of double-degree are highly dependent on the roles in the company and needs of business, although they did differ, interestingly, in whether technical-focused roles can be more benefited by a double degree or a postgrad qualification.

With regard to the formation of a double degree program, interviewee RB suggested mechanical/civil combination may be more beneficial in giving a student more comprehensive skills than mechanical/management combination, while interviewee BH asserted that mechanical/electrical double degree 'would be more valuable' due to many cross-over. What is interesting is it seems that employers, particularly in manufacturing industries, can easily see the benefit of a double degree if there is a clear synergy between the two areas. To extrapolate further, it is more likely for employers to accept a double degree graduate if they regard there is a clear cross-over or high correlation between the two discipline areas in relation to the nature of the job. On the other hand, simple addition to broaden the skill set will not automatically give a competitive edge to a double degree student over a single or postgrad student. More often than not, he/she will be regarded as not being able to be an expert in either discipline. This in fact echoes with the findings of the previous Studies (i.e. Studies 1~3) on limitations of BEng (Mech) and BMgt program curriculum.





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