

# Transforming Student Outcomes – the Holistic Grail.

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## Introduction

Widening participation (WP) should remove barriers and increase access / progression **for all** in Higher Education, concomitantly improving graduate outcomes and employability (1). Unfortunately, across the sector, there remains an absence of truly WP admissions criteria and curricula that allow WP students to achieve and flourish.

I accept students with A-level, BTEC and Access qualifications (104 UCAS points) onto my programme. I currently have: 32% students from IMD (index of multiple deprivation) quintiles 1 and 2 and 40% from POLAR quintiles 1 and 2; 45% are first in family to study at University. My students have high aspirations, but may not know how to maintain or achieve them (2). I support them to attain excellent outcomes in subject knowledge, transferable and applied skills and graduate employment, as evidenced below.

## Lecturer's Perspective - the Holistic Approach

Using a holistic overview, I have embedded transferable skills, laboratory competencies and subject-specific knowledge, with an emphasis on personalised learning. These strategies maximise learning outcomes and are delivered through high quality teaching from the academic team that I have recruited and mentored. 100% of my team attended University as first in family students and have an inherent understanding of how to successfully support students that underpins my learning, teaching and assessment design.

Central to my design is a spiral curriculum, where the students revisit key topics and techniques (3, 4) through clear organisation of progressive subject-specific and transferable skills, following the principles of constructive alignment (5). My approach incorporates experiential and problem-based learning in all levels of study and places the emphasis on student autonomy and development (6). My teaching methodology uses integrated and iterative formative then summative assessments. These develop the students' ability to evaluate their own progress and build confidence.

Analysis of my approach (below) shows that ALL students achieve well academically, regardless of their wider demographic background, gender, age, declared disability, ethnicity or first in family.

## Formative Assessment and Feed-Forward

Formative assessments in numeracy and communication skills are undertaken in the key skills module in level 4 that underpin many assessment types in level 5 and 6. Feedback mechanisms are dialogic (between tutor and student) or peer-feedback through a range of collaborative learning activities. This allows my students to understand, interrogate and challenge the standards, outcomes and criteria used to evaluate their work (7). These formative assessments are used to promote self-reflection and identify strengths and weakness. This has a significant positive impact on their subsequent summative assessment marks (8) and applying knowledge to authentic situations (9). The success of this approach is illustrated in Figures 1-4 below.

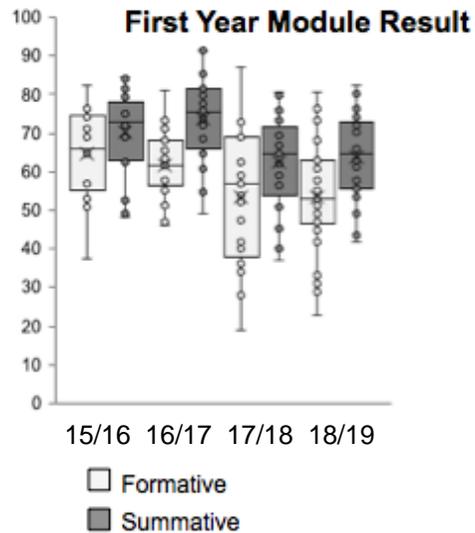


Figure 1. Box and Whisker plot of all formative and summative assessment marks for level 4 key skills module over 4 cohorts of students. Cohort sizes  $n=17$ ,  $n=23$ ,  $n=20$  and  $n=32$

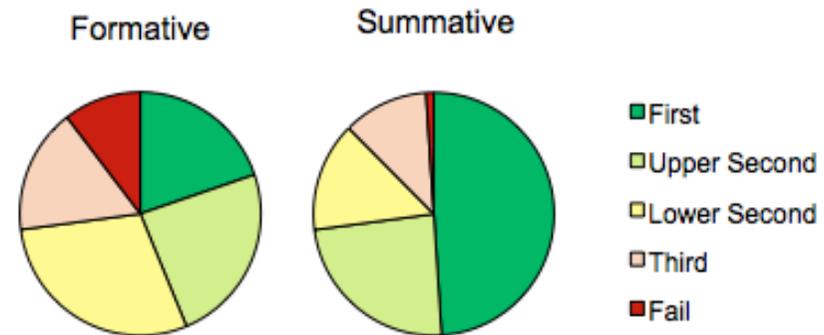


Figure 2. Pie charts of formative versus summative assessment marks for combined data (4 cohorts together),  $n=92$  students, for the level 4 key skills module.

Figure 1 clearly shows that summative marks are higher than formative marks for all cohorts in the level 4 module. For each cohort, the mean (shown by X) is typically below the median (line) for each data set, meaning that most students score above the mean mark. There is also a greater spread of marks towards the lower end.

If all cohort data is combined, the positive impact of the formative assessments (followed by feedback) on the summative mark is clear (Figure 2). The minimum combined mark for all formative assessments is 19%, compared with 37% for all summative assessments. The maximum mark also increases from 87% (formative) to 92% (summative). A key observation here is that although the maximum mark does not increase significantly between formative and summative attempts, the proportion of students obtaining a first-class module mark increases from 20% to 49%. This also correlates with a decrease in students in the lower classifications, with the number of students in the fail category reducing from 10 to 1.

Combined cohort data for marks achieved in each assessment type in the level 4 key skills module is shown in Figure 3:

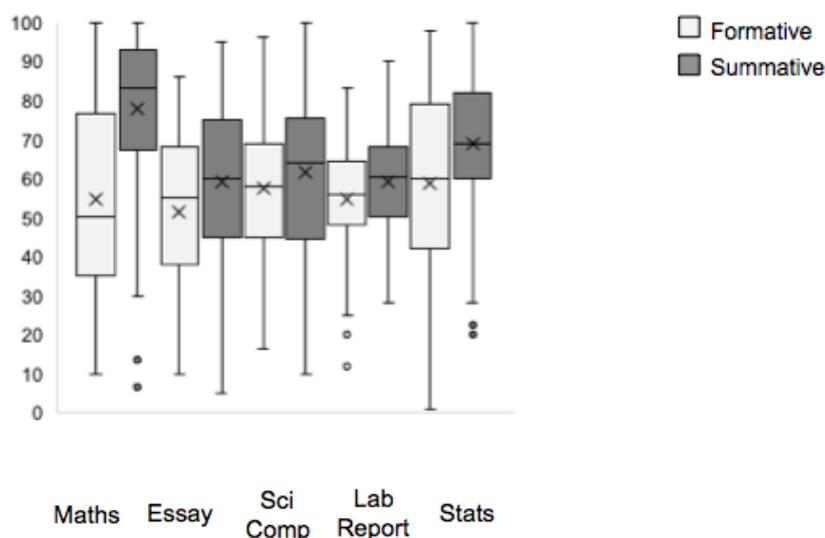


Figure 3. Box and Whisker plot of formative and summative marks per assessment type in the Level 4 module (data for combined cohorts, n=92).

All summative assessment marks increase, with the biggest increases in the maths and statistics assessment types. This is likely to be due to the relatively simple support that can be put in place to practice maths and statistics problems to improve students' understanding and ability in a short timescale. Although there are increases in marks for the written assignments (essay, scientific comprehension and laboratory report) these are less pronounced. Interestingly, even with these smaller differences between formative and summative attempt marks, the proportion of students gaining higher degree classifications again increases, whilst the number of students in the lowest categories decreases (Figure 4).

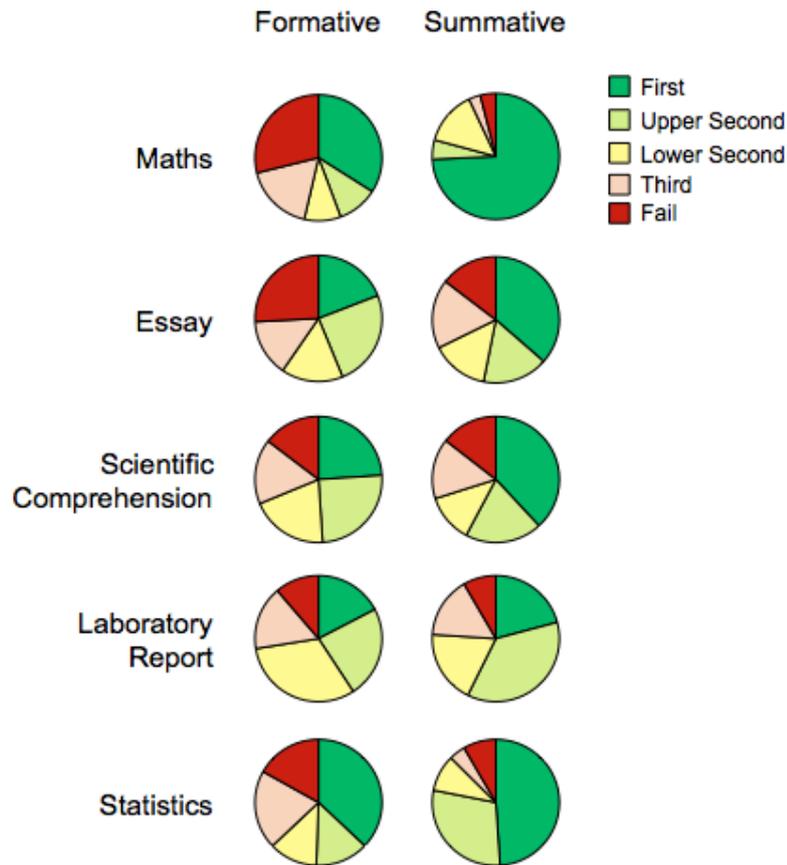


Figure 4. Pie charts of marks awarded for each formative and summative assessment type in the Level 4 module (data for combined cohorts, n=92).

Using a spiral curriculum, the skills assessed in these level 4 formative and summative assessments feed through into level 5 and 6 modules. Preparative low stake assessments guide the students to improve in summative assessments, followed by similar higher stake assessment types in levels 5 and 6.

The key question is - does this approach work?

### Student Achievement

I have analysed these characteristics: UCAS points; POLAR quintile; IMD quintile; gender; age; disability declared; placement year; ethnicity and first in family against academic performance in level 4. For the two graduating cohorts from my programme, none of the WP characteristics, nor UCAS points, are significant predictors of level 4 academic performance (Table 1).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.502 <sup>a</sup>	0.252	-0.033	6.59437	0.252	0.883	8	21	0.546
2	0.513 <sup>b</sup>	0.263	-0.068	6.70471	0.012	0.314	1	20	0.581

a. Predictors: (Constant), Placement year?, Disability declared?, First in Family, Age (Young/Mature), White/BAME, Gender, POLAR, Indicators of Multiple Deprivation

b. Predictors: (Constant), Placement year?, Disability declared?, First in Family, Age (Young/Mature), White/BAME, Gender, POLAR, Indicators of Multiple Deprivation, UCAS Tariff

*Table 1. All WP characteristics against level 4 mean mark for both graduating cohorts of students. Model 1 – WP characteristics EXCLUDING UCAS points, Model 2 – the influence of adding UCAS points to model 1*

For the purposes of this case study, I have analysed UCAS points upon entry against academic achievement in level 4, 5 and 6 (for the two graduating cohorts) to interrogate my holistic programme design (Figure 5).

As our entry criteria are 104 UCAS points, more student numbers are clustered here (Figure 5). Between 80-119 UCAS points, the student academic performance increases from level 4 to level 5 and again in level 6. All students in this range achieved a 2.1 or 1st class honours degree at graduation. From 120-149 UCAS points, the number of students achieving 1st class marks doubles between level 4 to level 6. Interestingly, the students with the highest entry points retain their mean marks throughout their studies. These data indicate that the academic and pastoral support, plus my assessment and feedback strategies, improve academic performance for students with low to middle UCAS points throughout their studies.

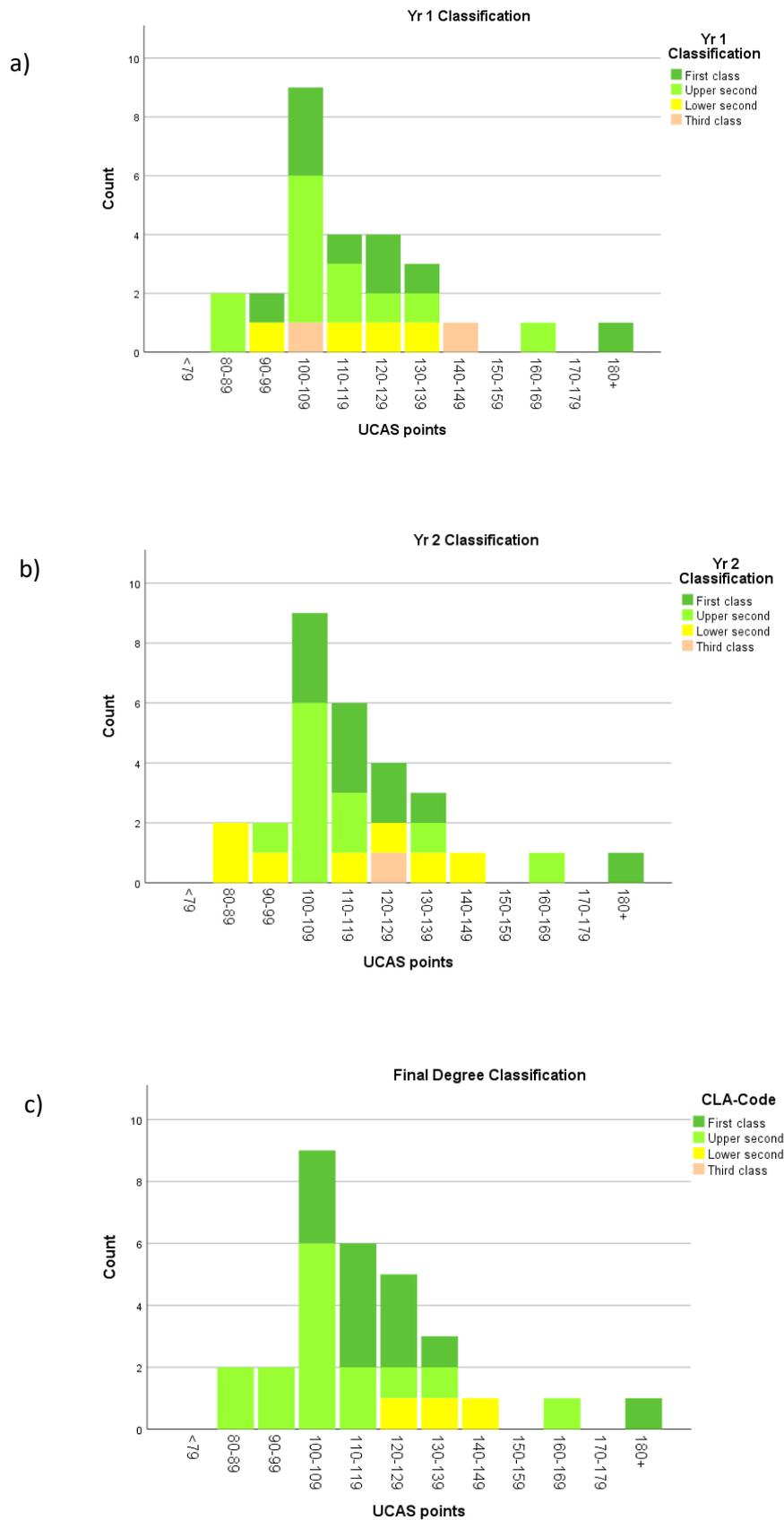


Figure 5 a) UCAS points against Level 4 mean mark, b) UCAS points against Level 5 mean mark and c) UCAS points against degree award

The positive effect on students with 80-125 UCAS points is exemplified further in Figure 6 and Table 2. The degree mark awarded to all graduates has no correlation with either UCAS points upon entry ( $R^2=0.002$ ) or any of the WP criteria (Table 2).

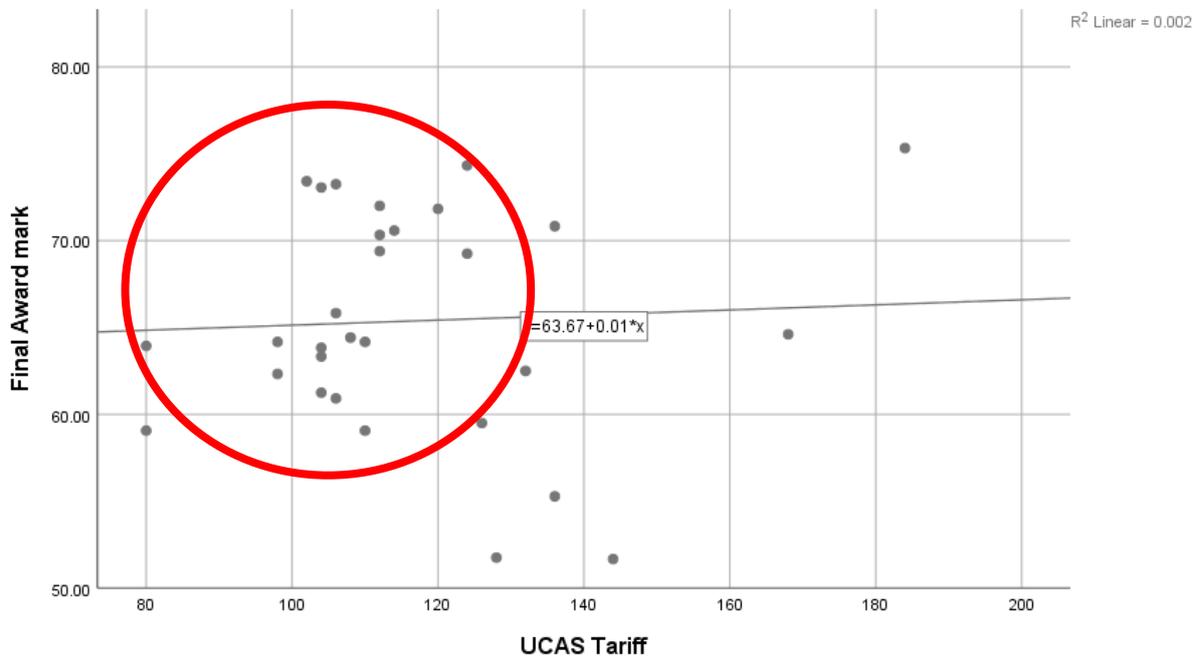


Figure 6. Scatter plot of UCAS points upon entry against overall degree mark achieved for all graduates to date ( $n= 30$ ). Students with 80-125 UCAS points are highlighted by the red circle and all achieved 2.1 or 1st class honours degrees.

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.559 <sup>a</sup>	0.312	0.002	6.47981
2	.576 <sup>b</sup>	0.332	-0.020	6.55218

a. Predictors: (Constant), Cohort, Indicators of Multiple Deprivation, Age (Young/Mature), Gender, Placement year?, White/BAME, Disability declared?, First in Family, POLAR

b. Predictors: (Constant), Cohort, Indicators of Multiple Deprivation, Age (Young/Mature), Gender, Placement year?, White/BAME, Disability declared?, First in Family, POLAR, UCAS Tariff

Table 2. All WP characteristics against final award mark for both graduating cohorts of students. Model 1 – WP characteristics EXCLUDING UCAS points, Model 2 – the influence of adding UCAS points to model 1

**Conclusion:** My approach works! WP characteristics and UCAS points are not significant predictors of final award mark. I support students (particularly between 80-140 UCAS points) to achieve highly through my holistic approach to learning, teaching and assessment design.

## Students' perspective

### Sustained Support

By providing students with structured support through tutorials and regular assessment and feedback opportunities, I can intervene if they are if they are struggling academically and ensure that interventions are targeted appropriately. This is acknowledged in module feedback and NSS open comments: *“Staff are amazing at making sure students are doing well. Both academically and in wellbeing.”*

The Peer Assisted Study Sessions (PASS) that I created and embedded further underpins the student-centred learning (both laboratory and academic support) and evaluates very positively: *“the PASS sessions were successful as the students were able to ask questions and seek advice from students in the year above that had already experienced the modules and content.”* The PASS scheme is now self-perpetuating and has run for each cohort of students in turn.

### Student Feedback

My emphasis on personalised learning has contributed to our 100% NSS scores for Q1 and 2 in both 2017/18 and 2018/19 from all students surveyed to date (100% response rate in both years of the survey). Further, 30/31 students gave 100% satisfaction scores for all areas of **Learning Opportunities**. Student satisfaction with the learning environment and assessment strategies that I have created and sustained is further evidenced by NSS open comments:

*“Assessment deadlines and requirements were clear and feedback was helpful and constructive.”*

*“The assessments are varied which allows people with different skills/talents to express them.”*

## Reflections

Issues / barriers to this approach are: it can be time intensive, but the workload is distributed through tutorial groups so can easily be scaled up to large cohorts (I did this previously with cohorts >150 by linking to the academic tutoring system).

Mean marks are usually lower than the median, implying bunching of students at the top with a greater range of scores below the median. This is not grade inflation, as evidenced by minimal increases in maximum scores, just uplift of mid-range marks.

The greatest impact is shown for students who may be struggling / mid-level achievers. This may reflect on a lack of targeted support previously, current access

to a range of strategies to improve marks or my embedded feedback discussions to ensure engagement in the process.

Intervention is more effective in maths style assessments, but all assessment types show improvement, resulting in excellent graduate outcomes

## Benefits

I have successfully established a learning environment that identifies and addresses barriers and transforms student outcomes. This culminates in outstanding academic achievement (graduating cohorts achieving >90% 1<sup>st</sup> or 2.1 degree awards) regardless of their wider demographic background. Also, 100% of the first cohort (2018) were in post-graduate study or graduate employment within 6 months of completing the programme.

My integrated and holistic approach to assessment design and student support produces positive outcomes for **ALL** of my students. There are no differential outcomes for students with respect to UCAS points, IMD, POLAR groups, ethnicity, gender, age and first in family.

**Word count - 1545 words (excluding figure legends)**

## Dissemination and Publications

**Jones, S.**, Ross J.I. and Beedham C. (2012) Presentation “Personal Academic Tutoring – Beyond Advice and Support” institutional L&T Conference, UoB.

Cassidy, R. Dransfield M, Sorby K and **Jones S.** (2016) Presentation "Open Badges - the Good the Bad and the Ugly" institutional L&T Conference, YSJ.

**Jones S.** (2016) poster entitled “Old problem – new tricks?” HUBS Spring Meeting

**Jones S.** (2016) workshop on assessment strategies, national IBMS Accreditation Training Event.

**Jones S.** (2017) workshop “Developing confidence in research skills and communication for students throughout their degree” institutional L&T Conference, YSJ.

**Jones, S.** (2017) Cathedrals Mission Group - peer learning project 2017. Case Study “Peer mentoring in Biomedical Sciences, University Of York St John” <http://www.lde-studentsuccess.com/uploads/stdsccs/attachments/Learning%20from%20Best%20Practice%20in%20Peer%20Learning%20and%20Mentoring%20across%20The%20Cathedrals%20Group%20-%20Compendium%20of%20Cas.pdf>

Taylor, J., Stewart E., **Jones, S.** (2020) Mind your Ps and Qs: Preconceptions and Quintiles in HE Biosciences (manuscript in preparation)

## References

1. Connell-Smith A. and Hubble S. (2018) House of Commons Library Briefing Paper 8204. <https://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-8204#fullreport>
2. Menzies, L. (2013) Educational aspirations: how English schools can work with parents to keep them on track. DOI: 10.13140/RG.2.2.11887.07842
3. Bruner, J. (1960). The Process of Education. Cambridge, MA: Harvard University Press.
4. Bruner, J. (1966). Toward a Theory of Instruction. Cambridge, MA: Harvard University Press
5. Biggs J. (1999). Teaching for Quality Learning at University, Society for Research into Higher Education / Open University Press, Buckingham
6. Boud D. (1988). Moving Towards Autonomy. Developing Student Autonomy in Learning, (ed) Boud D. pp17-39, London UK: Kogan Page
7. Bryan C. and Clegg K (2019). Innovative Assessment in Higher Education. A Handbook for Academic Practitioners (2nd edition). Foreword by Sally Brown. ISBN: 978-0-429-50685-7
8. Hattie, J., & Timperley, H. (2007). The power of feedback. Review of Educational Research, 77, 81–112.
9. Mueller, J. (2006). Authentic assessment toolbox. <http://jfmuller.faculty.noctrl.edu/toolbox/whatisit.htm#looklike>