Supporting Graduate Teaching Assistants (GTAs) in two STEM areas

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Supporting Graduate Teaching Assistants (GTAs) in two STEM areas

- GTAs are increasingly used to deliver a wide range of undergraduate teaching in STEM subject areas (Science, Technology. Engineering & Mathematics)

- The teaching activities included are:

- Lab demonstrating
- Marking assignments
- Lecturing
- Leading tutorials
- Supervising undergraduate research projects.

- The Boyer Commission (2006) reports on the importance of adequate support for GTAs, especially those engaged in teaching First Year undergraduate students, where student retention may be an issue.

Project aims

To **improve provision for GTAs** with responsibility in teaching

To develop and support a culture where GTAs can offer peer support and engage in literature that underpins and informs their practice.

Build on previous work done

- Within the L1 Biology course
- With the HEA postgraduate networking events
- The work of the University of Glasgow ADFs

Level 1 Biology –summary of organisation and GTA training provision

Organisation of laboratories

No of students in the Class - approximately 600
No of students per lab   - 40-50
No of students per GTA   -approximately 16
GTAs remain with the same students over both semesters. No problem
recruiting GTAs in semester 1, consistent problem with reliability in semester 2

GTAs Teaching roles within L1 Biology

Lab demonstrating
Leading tutorials
Some individuals - lecture & lead labs

Level1 Biology –summary of organisation and GTA training provision

GTA Training

Weekly run-through with GTAs with practical elements of the lab.

Additional resources on the GTA specific Moodle site

Peer support during the run though, lab and after the lab.

Reflection encouraged on each lab:

> GTAs are asked to feedback to the staff about the lab (via the Moodle site)

Reflection on their own teaching

> Students give anonymous feedback on their GTAs (Two stars and a wish)

Level 1 Physics – summary of organisation

Organisation of laboratories

No of Students in class - 240

No of students per lab – 50-60

No of lab sessions per week – 5

No of students per GTA approx. 16

GTA cohort is made up of MOSTLY PhDs and SOME post-docs

First semester students and GTAs are linked

Second semester GTAs are linked to an experiment and the students rotate round the experiments

Level 1 Physics – summary of GTA training provision

GTAs Teaching roles within L1 Physics

GTA teaching activities – lab demonstrating, marking of lab records and reports (both of which contribute to final grade), tutorial work.

GTA Training

GTA Training – one 3-hour session at the beginning of the year to go over rules of lab and expectations on GTAs, plus example exercise on marking reports.

Experiments available for practice during the week before they are carried out by students.

What is the current perceived role of the GTA in teaching?

- How do the Bioscience and physics undergraduates perceive the GTAs, comparing them to lab leaders?

- What is the current training provision for GTAs in both Bioscience and Physics and can any evidence of good practice / shortcomings be identified?

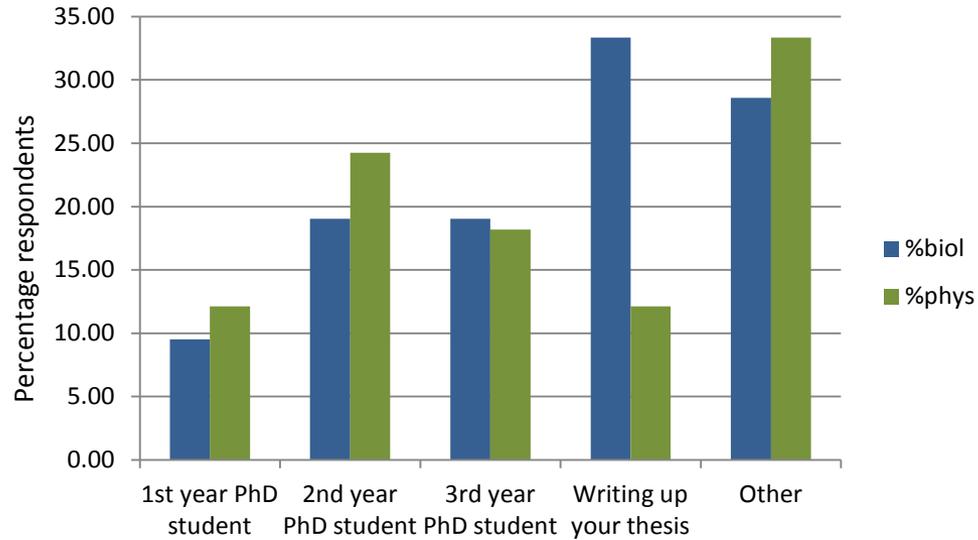- What is the perceived importance of the teaching role within both Bioscience and Physics by:

        Staff   -PhD supervisors
                      - lab leaders responsible for GTAs
        GTAs   -PhD students
                      -Post-doctoral staff
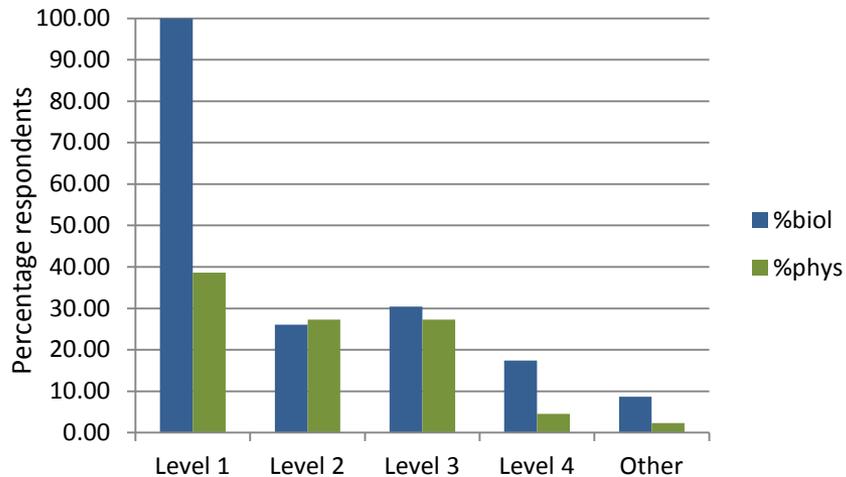   -other

Indicators of TA development

Senior Learner	Colleague-in-training	Junior colleague
Concerns		
Self/survival *How will students like me?*	Skills *How do I lecture, discuss?*	Outcomes *Are students getting it?*
Discourse level		
Presocialized *Give simplistic explanations*	Socialized *Talk like insiders, use technical language*	Postsocialized *Make complex ideas clear without use of jargon*
Approach to authority		
Dependent	Independent or Counterdependent	Interdependent/collegial
Approach to students		
Engaged/vulnerable Students as friends	Detached, student as experimental subject	Engaged, professional Student as client

Nyquist, J. D. & Wulff, D. H. (1996) "Working effectively with graduate assistants" Sage Publications, Thousand Oaks, London, New Delhi (p20)
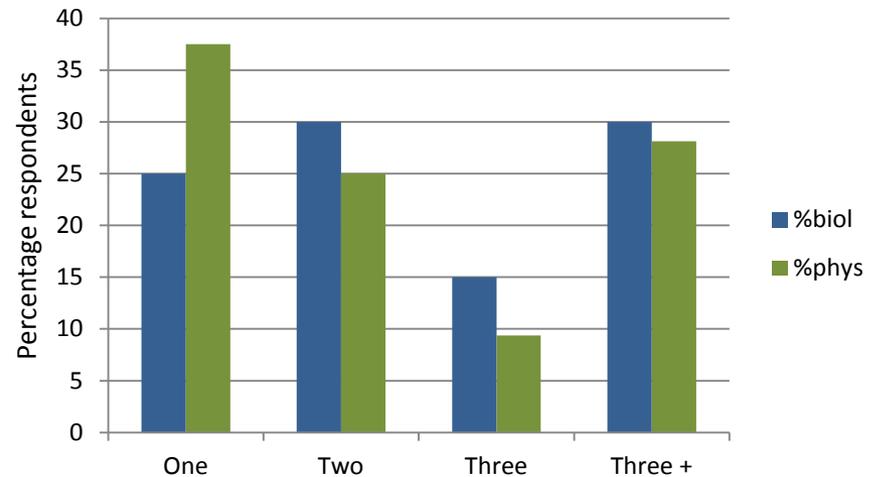
GTA experience

Which of the following best describes you?
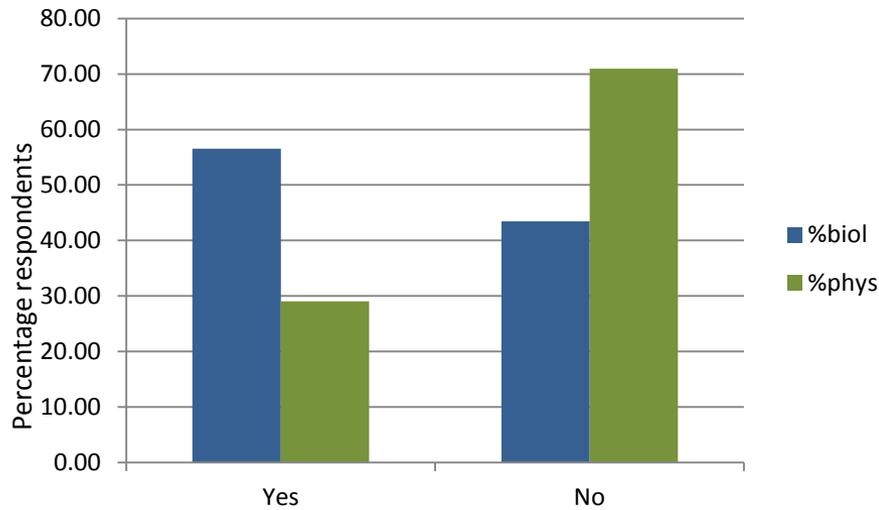

What level students do you teach?

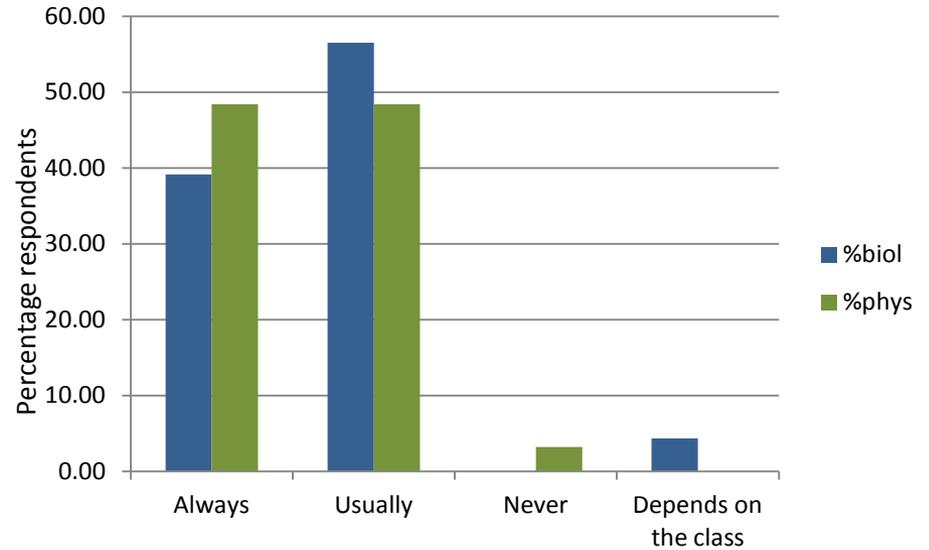How many years' teaching experience do you have?

GTA perceptions

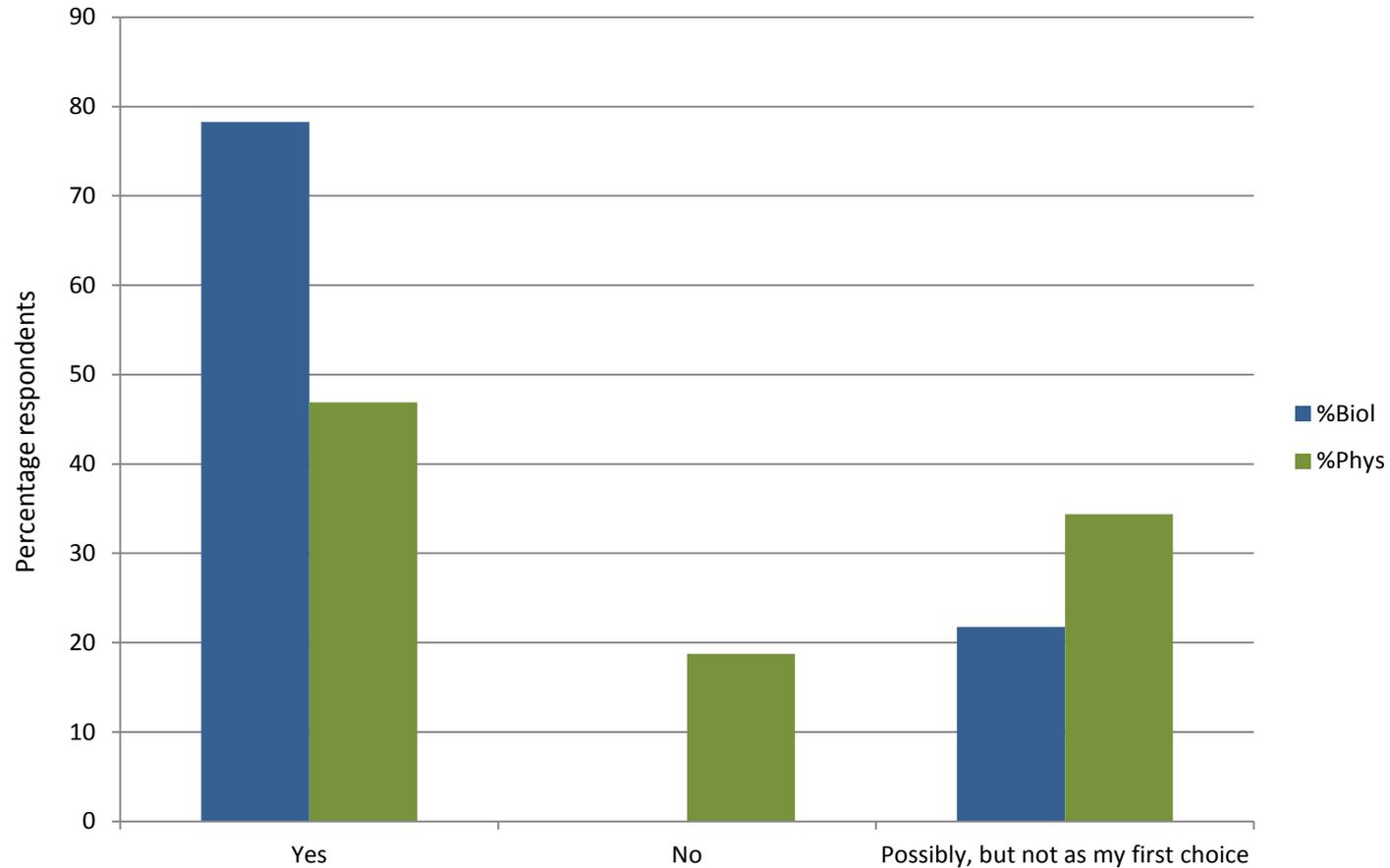Are you asked to teach things outwith your area of expertise?
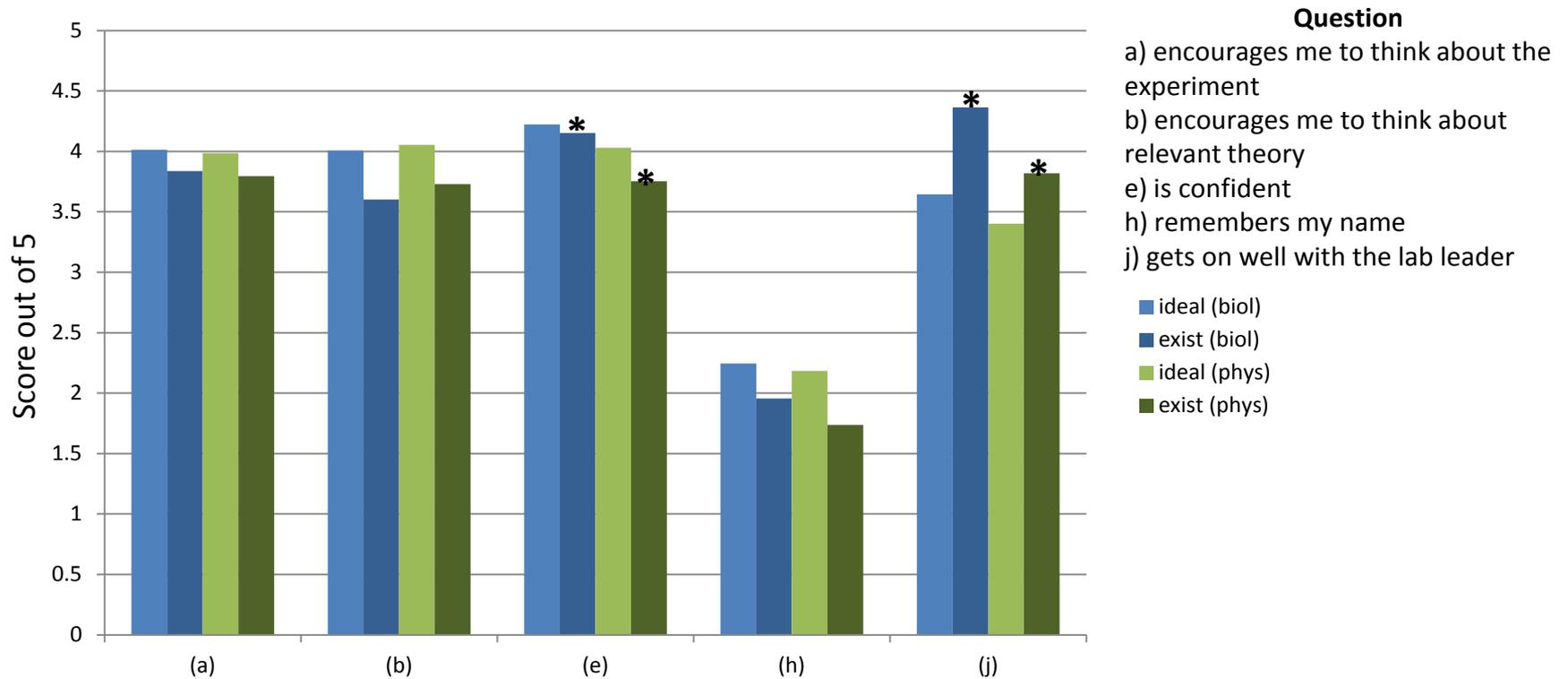

Are you given appropriate support in your teaching?

Teaching as a future

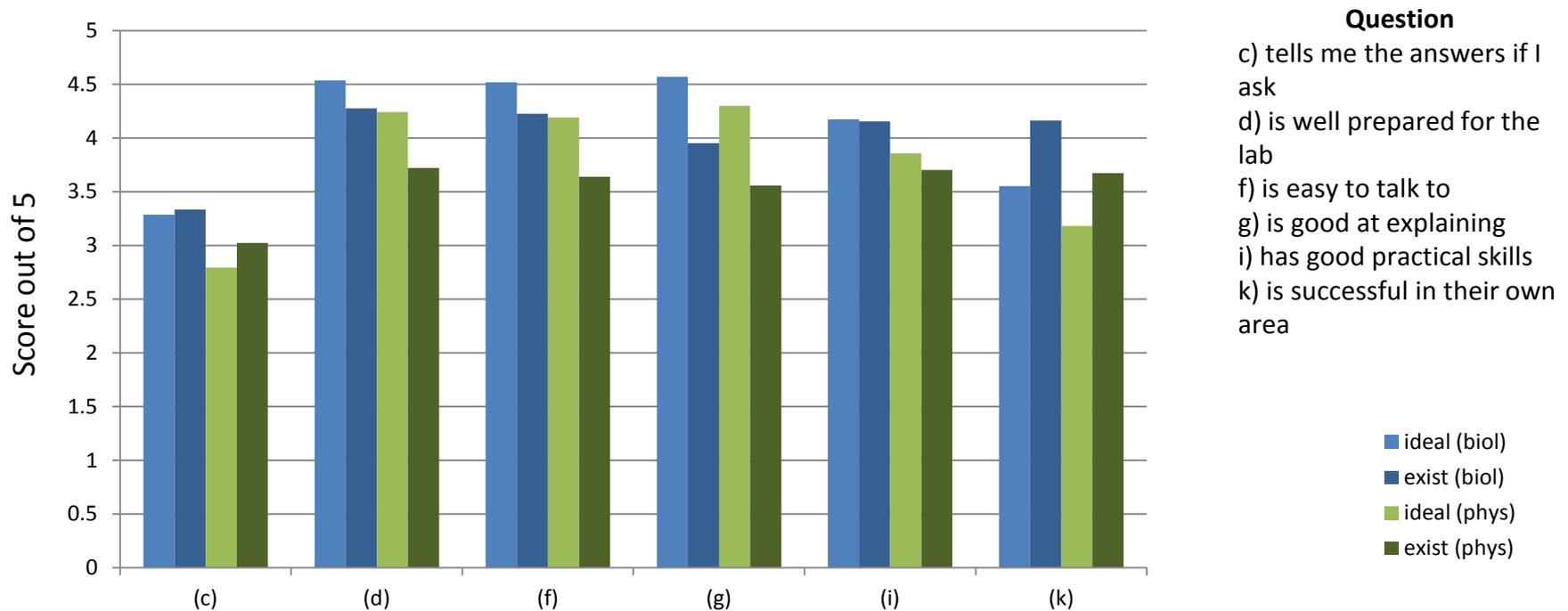Do you see teaching as part of your future career?

Students' perceptions of GTAs

Comparison between students' perceptions of ideal and existing GTAs in biology and physics
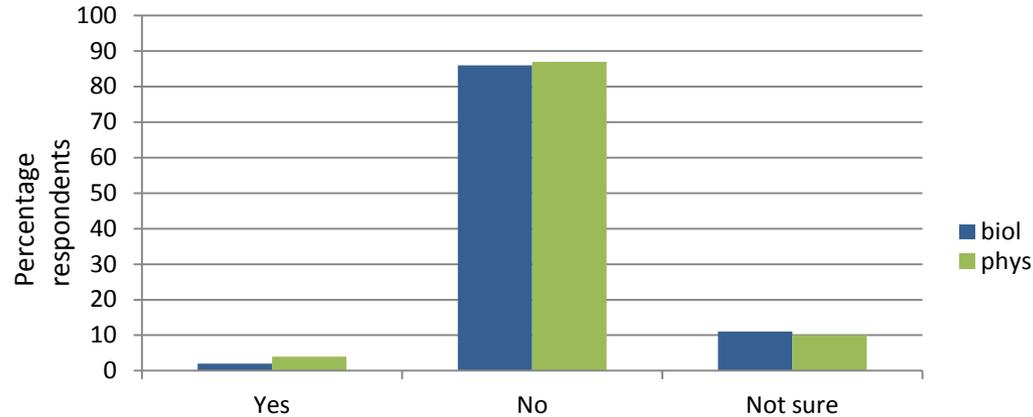

Question
a) encourages me to think about the experiment
b) encourages me to think about relevant theory
e) is confident
h) remembers my name
j) gets on well with the lab leader

■ ideal (biol)
■ exist (biol)
■ ideal (phys)
■ exist (phys)

Students' perceptions of GTAs

Comparison between students' perceptions of ideal and existing GTAs in biology and physics (significant difference)
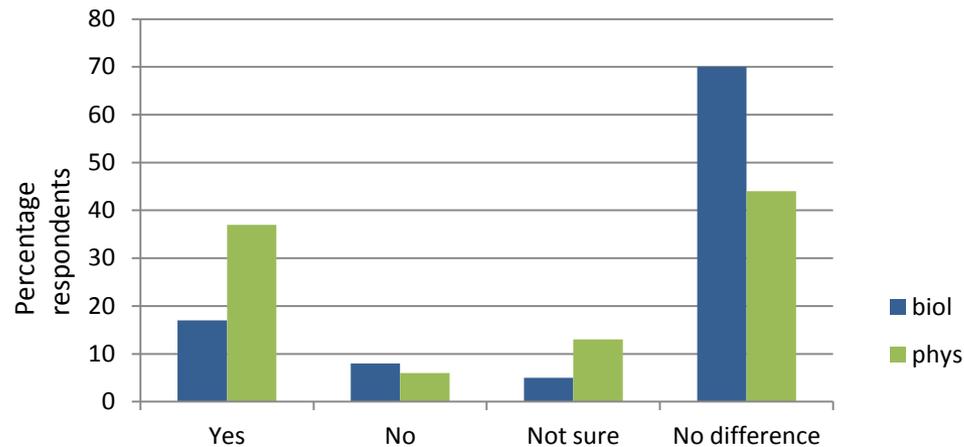
Question
c) tells me the answers if I ask
d) is well prepared for the lab
f) is easy to talk to
g) is good at explaining
i) has good practical skills
k) is successful in their own area

Students' perceptions of GTAs
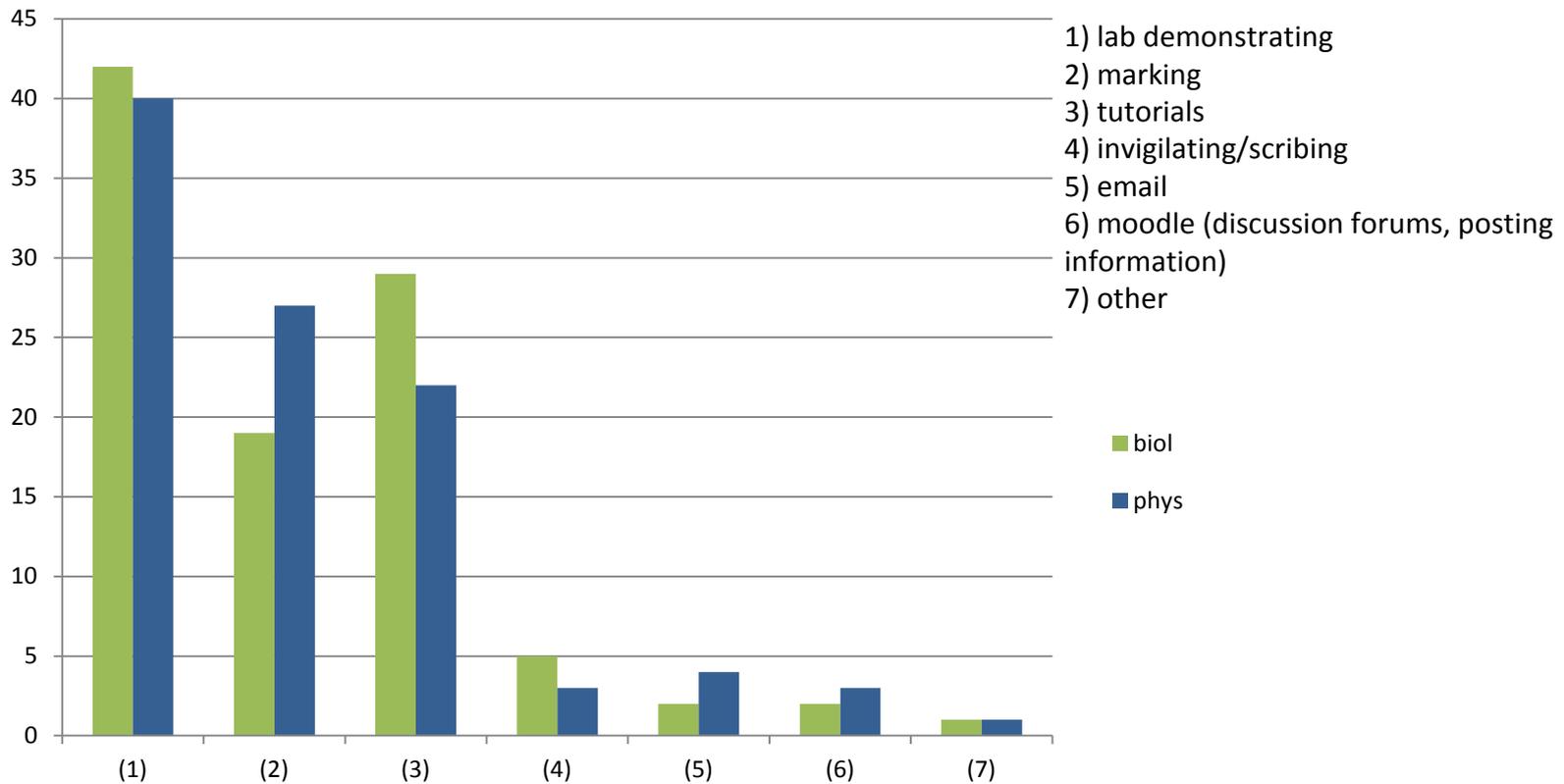
The lab would work just as well without the GTAs

The GTAs were more approachable than the lab leader

Students' perceptions of GTAs

What kind of teaching activities are the GTAs involved in?

1) lab demonstrating
2) marking
3) tutorials
4) invigilating/scribing
5) email
6) moodle (discussion forums, posting information)
7) other

Staff perceptions

- Staff from Biology and Physics were surveyed
  - 16 responses from Biology
    - 10 predominantly teaching
    - 6 research and teaching
  - 15 responses from Physics
    - 3 predominantly research
    - 12 both research and teaching
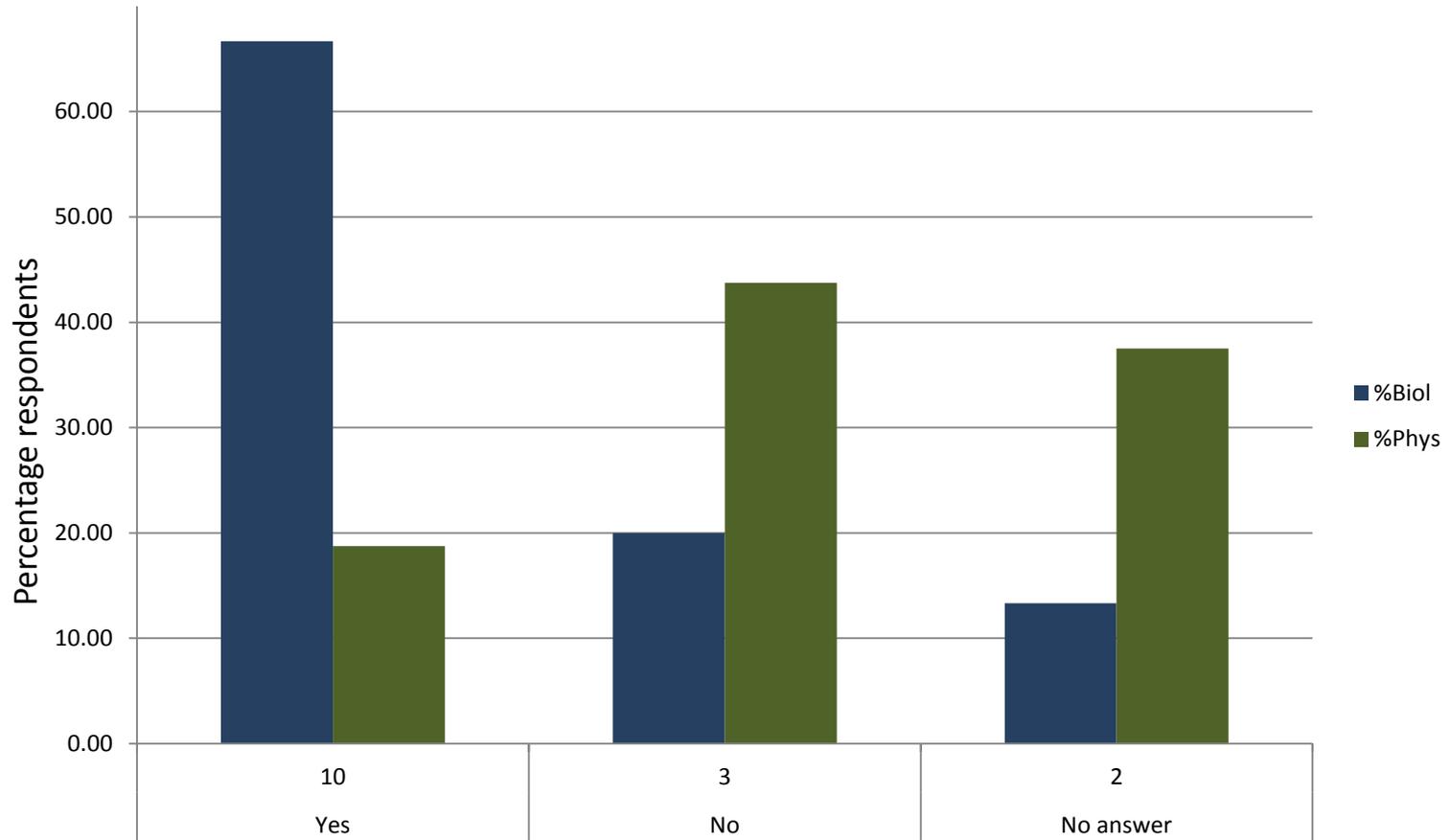- Low response rate

Staff perceptions

Do you feel you give your GTAs appropriate support in their teaching?
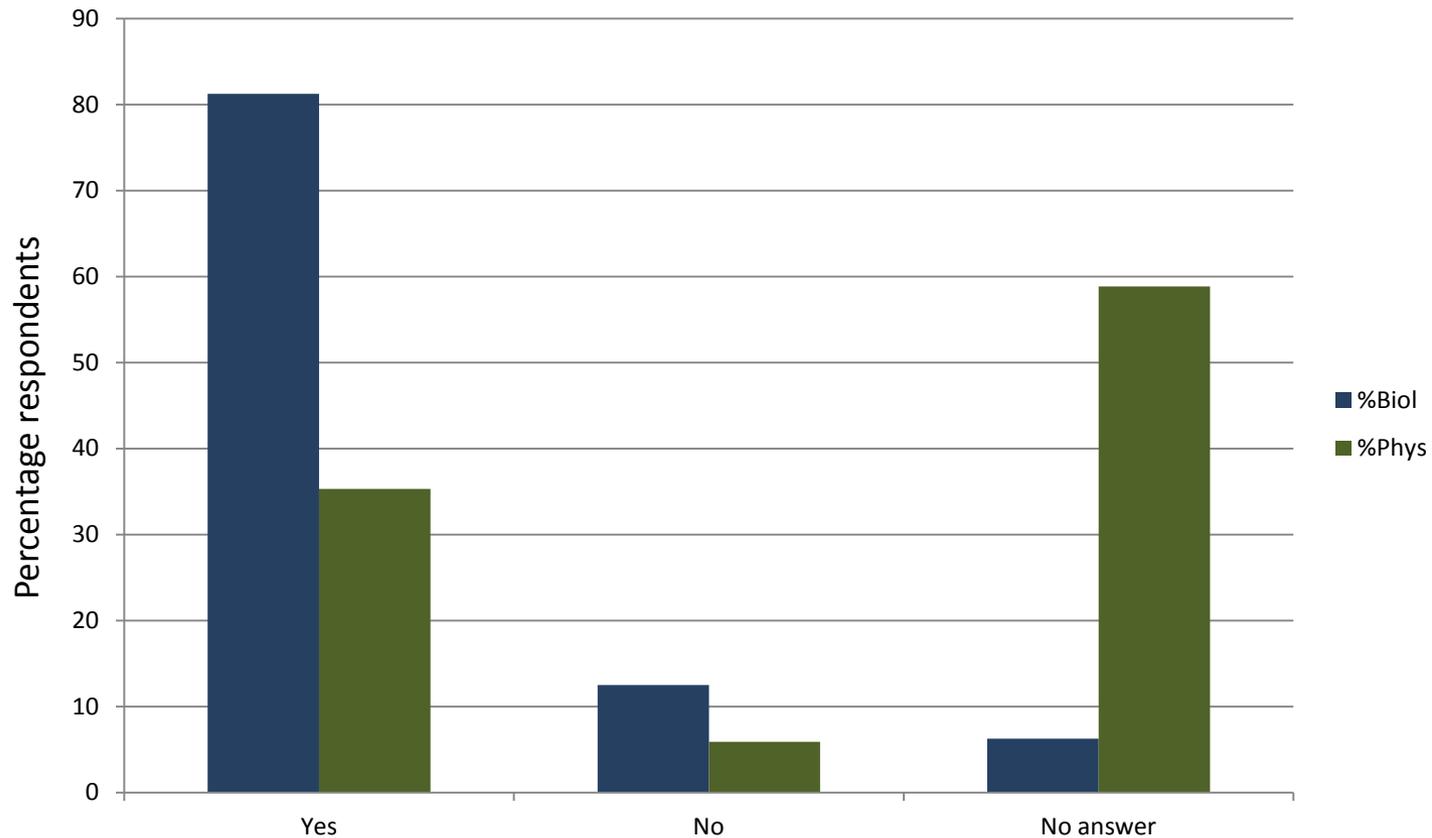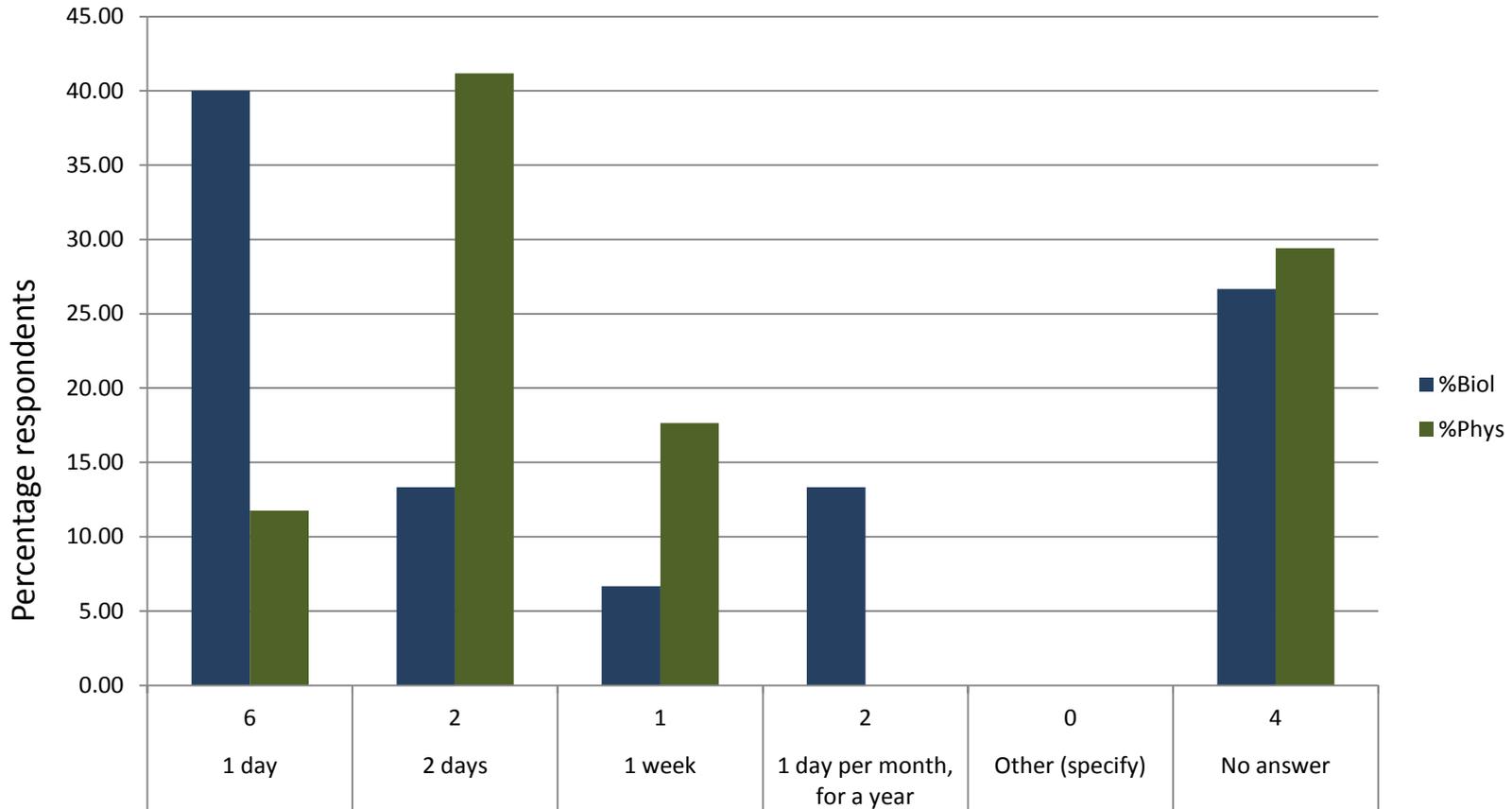
Evaluation of teaching

Do you evaluate your GTAs' teaching?

Learning about teaching

How much time would be appropriate to allow your GTAs to attend an accredited teaching course?

Importance of GTA activities

Activity	Biology staff	Biology GTAs	Physics staff	Physics GTAs
Research	1	1	1	1
Conferences	4	5	2	3
Teaching	3	3	5	4
Reading literature	2	2	3	2
Supervising project students	5	4	4	5

Student data combined for both Physics and Biology

- The students are happy with the teaching they receive from the GTAs

- The students are aware that some GTAs are not as confident as the lab leader (more experienced therefore it is not unexpected)
  - Identification of the confidence- what can be done to increase their confidence – mostly due to experience?
  - 27 comments regarding confidence: staff more confident
  - 22 comments regarding knowledge: staff more knowledgeable
  - 19 regarding approachability: GTAs more approachable

Beaton & Gilbert (2012) "Developing Effective Part-time Teachers in Higher Education" New Approaches to Professional Development, Routledge, SEDA Series (Published October 15th)

Personal communication: Issues of confidence and expertise arise with GTAs in every context

GTA data from GTAs in both Physics and Biology

GTAs for both subjects feel they receive appropriate support for their teaching

For Biology and Physics more **want** to do than **actually** do the following – lead tutorials, give lectures, mark assessments.

Physics only – more want to be involved more in the supervision of project students

Our GTAs are happy with the training they get for lab demonstrating
– they want to gain experience in the other forms of teaching – what is the training provision for that?

No 1 activity in importance is research for both – not unexpected.
For Physics teaching is 4th or 5th
For Biology it is 3rd

Future work

- Focus groups

- The data from the questionnaires will be followed up by semi-structured focus groups; one for staff, one for GTAs and one for undergraduates

- This will allow further investigation of issues or perceptions of GTAs in teaching which are highlighted from the questionnaires

- Extend the feedback collection to other courses